AUG 14 1944

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Minnesota MEDICINE

PUBLISHED MONTHLY BY THE MINNESOTA STATE MEDICAL ASSOCIATION

Northern Minnesota Medical Association

Hibbing, Minnesota

August 26, 1944

AUGUST, 1944

Vol. 27 . . . No. 8

40c a copy—$3.00 a year

Printed in U.S.A.

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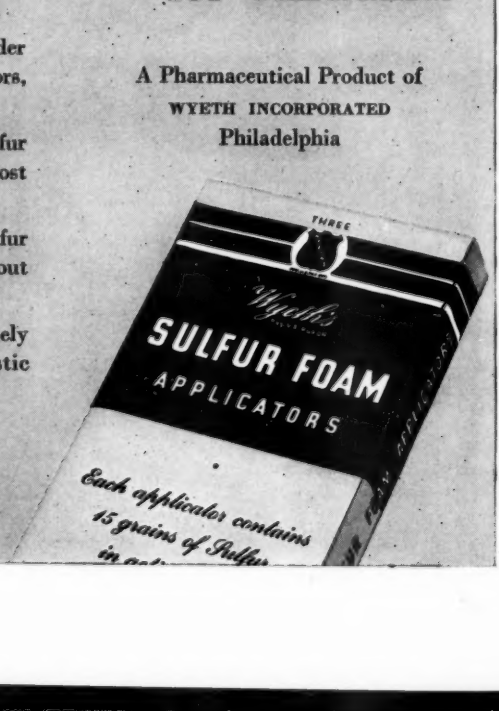

Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 27 August, 1944 Number 8

CERTAIN OBLIGATIONS OF THE PHYSICIAN

E. MENDELSSOHN JONES, M.D.

Saint Paul, Minnesota

MOST of us here tonight grew up in a practice and profession whose mold appeared fixed and unchanging. Our duty seemed clear. It was to take care of the sick and keep up with the rapid advances of scientific medicine so that our patients would have the best that scientific medicine had to offer. It seemed to us that all of our time and energies were required to attain that goal.

We have always known that some people could not afford expensive medical service and we have tried to give them the care they needed for less. We have also known that some people stayed away from the doctor until it was too late because they felt they could not pay. In point of fact, a recent survey made by the National Physicians' Committee showed that 29 per cent of the people questioned had indeed put off consulting a physician because of possible costs.

Nevertheless, we have tried to keep our charges within the ability of the patient to pay and we have, likewise, given a considerable share of our time and thought, individually, to charity services for which we asked and expected no financial return, because we have all understood such services to be part of the obligations of medical practice.

We have felt that the social ills which were reflected in the failure of some people to secure good medical service were no more the responsibility of the doctors than of the lawyers, businessmen or government officials.

It may be that we have been a little backward in our perception of larger social problems, except as they involved the misfortunes of an individual patient or his family. Rightly or wrongly, we may have thought that they were not our business.

Be that as it may, it is now clear that social aspects of medical service, at least, are our business. We must devote time and attention, in spite of wartime responsibility and burdens, to problems of quantity and distribution beyond the limits of our own practices. Our future as independent practioners of a progressive science is at stake.

There are a great many people in the United States who believe honestly that an over-all plan for better distribution of medical services should be the first step in the solution of our most pressing social problems. It is true, for the most part, that these people are not practicing physicians; but they are vocal and eloquent. Editors and bureaucrats lend them a ready ear. Many intelligent people listen to them seriously. And whatever our personal feeling may be, we are not entitled to regard their efforts as simple enmity, nor as a plot against the medical profession. On the contrary, we are under grave obligation to examine all of their proposals with care.

It is unfortunate that so many of these earnest reformers believe that government control of medical services is the answer to the problem. As practicing physicians, we are convinced that government control would destroy private practice entirely and place the care of the sick in the

Presidential Address at the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, April 14, 1944.

hands of the politicians. But it is also unfortunate that medical men, while fighting a thing which they honestly believe to be a threat to the public welfare, should also have been jockeyed so often into an appearance of stubborn self-interest and obstructiveness.

It is a fact that the average health of the people of the United States is good; that our medical services in general are the best in the world today. It is also a fact that there are sections of the United States, especially in the South, where the number of doctors and hospitals, even in peacetime, was very inadequate. And medical service as we know it in Minnesota was completely out of reach of great numbers of the people. The fault, in this instance, does not lie with the medical profession, of course; but no good will come of denying the facts, nor of glossing them over for the sake of painting a rosy picture. The facts are there.

It is a fact that in most sections of the United States any man, woman or child who seeks it can get good medical care in case of need, and that better care is available for the sick poor than anywhere else on the face of the globe today. It is also a fact that the cost of good medical service has mounted greatly in the last fifty years and that people of small income are often deterred from getting all of the care we would like to give them because the costs are too high. We know that here, too, the fault does not lie with the individual doctor. But no good will come from denying the fact that the problem exists. It is a problem which we, as doctors, should be the first to endeavor to solve.

We are now engaged in a great and a necessary fight against the legislation introduced by Senators Wagner and Murray and Representative Dingell which provides for compulsory medical and hospital insurance as part of the social security protections of the United States. The pernicious aspects of this legislation will not be discussed here as they are well known to all of you. It is essential to the future of medicine in the United States that we oppose it by every means at our disposal, as public-spirited men and women.

It is necessary that we go to Washington, as an organization, and take our part, there, with respresentatives of other professions concerned with the care of the sick, so that we may keep constantly before Congress the requirements of good medical service and the necessity, for the sake of the public welfare, of preserving high professional standards. And, indeed, I am happy to be able to announce that now, after considerable delay, the medical profession has established its own office in the national capitol. The machinery is at last set up to handle our public relations as they should have been handled long ago. It is gratifying to know, also, that the movement within the profession which brought about this important development, began right here in Minnesota, with the work of our leaders and the action taken by our House of Delegates last year.

But let us not sit back, on that account, and again submerge ourselves in the practice of medicine. We are better equipped, now, to fight unsound legislation in Washington, it is true. But the job is not done. You do not save a system or a service or a business merely by fighting those who want to change it. Your system or your service or your science must grow with the times. It must develop to meet the changing social, as well as professional, needs of the people. It must constantly enlarge its scope, set new sights, find new solutions to new problems.

Thus, in the distribution of medical services, there are still great problems to be solved. They are bound up, if you like, with the other problems which afflict our national economy. They may not, with fairness, be laid exclusively at our door. But they are our problems because they concern the health of the people and the care of the sick. We must study them, we must find solutions for them, and then we must go out as reformers and leaders, ourselves, to put them into effect.

If we do not believe that compulsory sickness insurance under government domination is the solution, then what do we believe? That we can simply go on as before, in a world full of planners and reformers, and that, somehow, the bad spots and the uncomfortable facts will take care of themselves?

It would seem that the solutions we are seeking lie in many directions and in the development of many new techniques, all of them within the scope and pattern of the independent practice of medicine and often with the coöperation of the government itself. It would seem that these solutions must be found, community by community,

and state by state. That they should not be imposed as a rule-of-thumb by remote government agencies.

In Minnesota, it is true, we have gone a long way in the solution of problems peculiar to our state; but we must not and cannot rest upon well-earned laurels.

We are all overburdened with wartime practice, at home. We are taking care of our own and our colleagues' patients while they are in the service and we fancy, perhaps, that we are doing everything for our country and profession that could be expected of us. But this is not a question of abstract justice, nor of right nor of convenience. Emergencies always transcend abstractions and brush aside personal rights and conveniences. And this is an emergency.

We must plan now for better health and better distribution of services and facilities for the people of Minnesota after the war. There are places, even here, where doctors are too few and hospitals are inadequate. There are people, even in Minnesota, who find medical costs too hard to bear.

What are we going to do about it? We have established a Committee on Postwar Planning in the Council which is to have a representative on its membership from every county in the state. This committee was not created merely because postwar planning is the thing, these days. It was established because we need it badly and, to carry out its purpose, extra time and effort will be required from men whose hands are already full and whose time is seldom their own. That purpose is to make a county by county study of medical needs in Minnesota. Is a hospital needed here? Another doctor there? This committee must know about it. Its conclusions must be based upon the solid facts of transportation, population and facilities already in existence here.

There facts must stand up under scrutiny and they must be ready to guide us when the war is over, when our soldiers come back and we actually begin to put into effect all of our plans for a fine, new postwar world.

In Minnesota we have had a distinguished and efficient health administration for many years. The department and the board have worked closely with the doctors of the state and have achieved enviable records in the control of communicable disease. But our health department has often been tied down by lack of funds and lack of public interest in its work. Are we, in Minnesota, to wait for Washington to prod us into expanding our public health services and increasing their personnel? Our postwar planning for Minnesota should take into account, as fundamental to the health and welfare of our people in the future, the steady development of sanitation, disease control and routine protections against preventable disease.

We must also take into account medical costs and the growth of the insurance idea for spreading the burden of costs, at least in the case of catastrophic illness. The survey conducted by the National Physicians' Committee showed that no less than 63 per cent of the people questioned believe methods could be devised for easier payments for medical care.

We are all aware of the fact that modern diagnostic devices and equipment are expensive and that full use of these is sometimes too great a burden for the average patient, even in moderate circumstances, to finance. We have all tried honestly to adjust these bills, as far as possible, to the ability of the individual patient to pay. On the other hand, have we ever made a serious, organized study of costs to find out if there are not, perhaps, ways of cutting here, of joint use of facilities there, of better business methods elsewhere, which would permit us to give the same service for less? Businessmen have done it. But, of course, we are not businessmen and we have taken refuge in the fact that medical service is personal service and not susceptible to mass procedures and savings. Nevertheless, some of our equipment, involving large capital expenditures and high overhead, sometimes lies idle for long periods of time while like equipment lies idle, too, in the office next door. Duplication and waste are not essential to good medical service. If we are to maintain ourselves as a free and independent profession we are going to have to study these things. Let's study them first in Minnesota.

And let us also study carefully all insurance and pre-payment plans for delivery of medical service.

There is nothing unsound nor unethical in the insurance principle as applied to costs of medical service. It has been approved by organized medicine and is now under experiment in a number

of counties and states in the United States. Many of these experiments were undertaken in industrial communities and the plans were forced into being to meet an acute need. No such emergency measures have been necessary in Minnesota and we have been allowed time for study and observation so that our own plans, if we decide to undertake them, may hope to avoid costly blunders which plagued the pioneering efforts in other states. It seems obvious that insurance or prepayment plans for covering medical costs are the trend of the future; and that some form of insurance protection will be as much a part of the fixed costs of living for the average family, some day, as protections against fire, theft, accident and loss of life.

If compulsory legislation fails of passage at this session of Congress—and we hope it will fail—then we must be ready to offer a voluntary means of spreading medical costs to those who want it. If we do not, new legislation will be introduced next year, or the next, and our chance to remain free men and physicians instead of medical jobholders will grow steadily smaller.

Not long ago our own congressman from the fifth district of Minneapolis, Dr. Walter H. Judd, told the National Conference on Medical Service in Chicago, that he believed the Wagner-Murray-Dingell Bill would not pass the Congress this year. "That means," he told the conference, "that you will have a breathing spell. But it will be your last breathing spell. If you fail to do the things that need to be done now, you will be too late."

Let us use our breathing spell to good effect in Minnesota. Let us fight compulsive legislation with all our might. But let us also study our situation well in our state and be the first—not the last—to advocate a sound, public-spirited health and medical policy for Minnesota in the postwar world.

MALIGNANT CARCINOID TUMORS OF THE SMALL INTESTINE

Report of Two Cases

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Duluth, Minnesota

THE carcinoid or argentaffine tumor is considered by many physicians to be benign. This is especially true among the younger men; all of the interns during the past few years at St. Mary's Hospital registered surprise on learning of the malignant possibilities of this tumor. In the past six months, two malignant carcinoids of the small bowel have come to autospy. It is the purpose of this paper to report these two cases and discuss some of the characteristics of this tumor.

Case 1.—A fifty-year-old housewife, a patient of Drs. H. E. Bakkila and J. R. Manley, was first admitted to St. Mary's Hospital on December 28, 1941. Her history centers around gastro-intestinal complaints, constipation, and diarrhea for two months, questionable tarry stools and a weight loss of 15 pounds in the previous three months. On physical examination the liver extended two to three fingers below the costal margin and was thought to be somewhat rough but not tender. A freely movable, palpable mass was located just above the umbilicus.

The clinical laboratory data were not remarkable. X-ray studies were made of the gastro-intestinal tract and the colon. The report revealed no intrinsic disease of the stomach. However, the stomach was shifted to the left which was interpreted as due to an enlarged left lobe of the liver. There was some irregularity and deformity of the pyloric end of the stomach, probably due to adhesions. It was suggested if the patient was explored, that this area should be thoroughly examined to rule out malignancy of the pancreas or glands in this area. The colon was reported negative. The palpable mass in the abdomen was below the colon and did not appear to be connected with it.

She was explored on January 2, 1942, and a hard, white mass measuring 1.5x2.5 inches was found in the root of the mesentery of the small intestines. The liver was infiltrated throughout. A biopsy was taken from the mesenteric mass which was later reported as hyalin connective tissue. It was felt that nothing could be done and the wound was closed. The surgeon's impression was malignancy with liver metastasis. Her recovery from the operation was rapid and she was discharged on January 12, 1943.

She returned to the hospital on September 11, 1943. During the interval she had received numerous x-rav treatments, had felt reasonably well for a few months after leaving the hospital, but gradually had gone down

From the Department of Pathology, St. Mary's Hospital, Duluth, Minnesota. Read before the St. Louis County Medical Society, Duluth, Minnesota, March 3, 1944.

hill. She was given symptomatic treatment and expired September 22, 1943, approximately one year and ten months after the operation.

At autospy, the mass in the mesentery of the small intestine measured approximately 5 cm. in diameter and was made up of considerable fibrous tissue. It extended into the wall of the small bowel at a point about 5 feet from the ileocecal valve. Although the outer layers of the intestinal wall were involved, there was no apparent break in the mucosa. However, the mass pushed into the lumen to some degree, but not obstructively. The remainder of the gastro-intestinal tract including the appendix appeared essentially normal. The liver weighed 2,410 grams and was studded throughout with gray-yellow nodules measuring up to 4 cm. in diameter. There was scattered retroperitoneal lymph node enlargement which on cross-section, as did the primary tumor, presented a gray-yellowish color similar to the nodules in the liver.

The microscopic examination of the primary mesenteric tumor and the metastatic lesions in the liver and lymph nodes was typically carcinoid. The cells were in cords and nests of atypical epithelium of moderate or small size and usually polyhedral. Occasionally mitosis could be seen. The cells were embedded in newly formed connective tissue.

Case 2.—A truck driver, fifty years of age, a patient of Dr. R. Bardon, entered the hospital on October 14, 1943. He gave a history of stomach trouble, gas and discomfort, occasional nausea, but no vomiting and a weight loss of 20 pounds in the past seven or eight months. His stools had been somewhat irregular for about one year but he had never noticed any which were definitely black. Ankle edema had been present for about one month. Physical examination revealed the liver to be definitely enlarged, quite firm, but not tender. No other masses were noticed in the abdomen. The ankles showed a 1+ pitting edema. The prostate was 2+ symmetrically enlarged and questionably firm.

The clinical laboratory added nothing unusual. X-ray studies of the stomach had been made before entering the hospital and were reported negative. X-rays taken while in the hospital revealed metastatic malignancy involving the chest, pelvis, and ribs. The skull was negative.

A proctoscopic examination was negative. A punch biopsy of the liver was unsatisfactory. It was felt that there was not much to be done and he was discharged October 28, 1943 with a diagnostic impression of metastatic malignancy primary probably in the prostate.

He was readmitted on January 26, 1944, stating he had been gradually becoming worse and recently had noticed an increase in the number of watery, foamy stools. A physical examination revealed evidence of additional weight loss, edema, ascites and a distended abdomen, making it difficult to outline the liver and spleen. His treatment was symptomatic and he expired on February 15, 1944.

At autospy, a somewhat irregular, rounded, and slightly prominent tumor mass measuring 3 cm. in diameter was found about 4 cm. above the ileocecal valve opposite the attachment of the mesentery. The mass involved all the layers of the wall of the small intestine and protruded into the lumen about .25 of an inch. The remainder of the gastro-intestinal tract including the appendix did not show anything remarkable. Metastases was found in the retroperitoneal glands (near cecum), liver, spine, ribs, sternum, pelvic bones, lungs, and spleen. Cross-section of the tumors in all these locations revealed a rather firm grayish-yellow tissue. A microscopic examination of the primary tumor and metastasis was typically carcinoid.

The above two cases represent single lesions of the small bowel. However, multiple lesions have been reported. Humphreys[2] in 152 cases found multiple lesions in 30 per cent. The average number per case being two to ten lesions. Pennington and Priestley[5] report a case with sixty-eight different tumors in a segment of the small bowel. Our first patient has a history of almost two years from the time of the first symptoms until death and illustrates the usual metastatic lesions to the liver and the regional lymph nodes. In our second case the involvement was undoubtedly much more advanced before symptoms were apparent and the course much shorter. In searching the literature, bone metastasis has not been a common finding and no case, that I was able to find, records as extensive an involvement as this case presents. As is common to most all carcinoids, neither of our cases was diagnosed ante mortem.

Discussion

The origin of carcinoid tumors has been a controversial subject and has resulted in many names which are based on morphology, staining reactions and behavior, or various theories of origin. Presently, the Kultschitsky or argentaffine cells of the crypts of Lieberkuhn are believed to be the cells of origin. The data from an article by Porter and Whelan[6] is interesting. The name carcinoid was first suggested in 1907 by Oberndorfer and is the name commonly used today. At that time, he believed this tumor to be entirely benign. Ransom in 1890 reported the first malignant argentaffinoma originating in the ileum and metastizing to the liver. Although Oberndorfer was first to point out the chronaffinity of the tumor cells, it was Gassett and Masson in 1914 who clearly showed that the cells were argentaffine and represented down growths from the bases of the crypts of the appendiceal mucosa. Schuldt[7] in discussing the histology of the gastro-intestin-

al tract quotes references which reveal these silver absorbing cells to be located close to the basement membrane in the crypts of Lieberkuhn and have been observed in practically the entire gastro-intestinal tract including the gall bladder.

Carcinoids are most frequent in the appendix and lower ileum but, as shown above, may be found in any location in the entire intestinal tract including the gall bladder. Humphreys[2] mentions a few which have been reported as occurring in the duodenum and rarely in the stomach. Porter and Whelan[6] report carcinoids are twice as common in the appendix as in the small bowel and that elsewhere in the gastro-intestinal tract they are found in the stomach, the gall bladder, the duodenum, Meckel's diverticulum, cecum, and colon. Hopping, Dockerty, and Masson[1] believe that carcinoid occurs about once in every 200 surgically removed appendices, and of this number, about 50 per cent are located in the tip. Elsewhere, they occur in decreasing order of frequency in the ileum, the cecum, the jejunum, the colon, and the stomach.

It seems reasonable to state that carcinoid tumors may be found anywhere in the gastro-intestinal tract between the esophagogastric injunction and the anus, including the gall bladder. The age instance of these tumors is not definitely stated. I suppose one may assume that they may occur at any age. Statistics definitely show that carcinoids of the appendix appear in an earlier age group, averaging probably twenty-five years. Carcinoids of the gastro-intestinal tract for most part occur in the cancer age group.

Malignancy.—Much debate has occurred regarding the question of when is a carcinoid benign and when malignant. Pathologists do not seem to agree, but it seems safe to say that all are potentially malignant and if allowed to grow long enough, they undoubtedly will break into and infiltrate the surrounding tissue. Where they go from there seems to vary in different individuals. The liver and regional nodes are the common locations for metastasis. For the most part, they seem to be a slow-growing tumor and, if producing obstruction, should be removed even in the presence of metastasis. Pennington and Priestley[5] report a patient who was alive and in excellent health nineteen months after palliative resection which was done in the presence of liver and peritoneal metastasis. This is the case we have previously mentioned in which there were sixty-eight different tumors. Latimer[3] mentions Mallory's patient who, with a portion of the ileum resected, lived fifteen years to die of another cause. At autopsy, enlarged retroperitoneal glands were found which proved similar to the previously removed carcinoid. Porter and Whelan[6] mention other similar cases, proving the slow-growing tendency of these tumors.

The incidence of metastasis in carcinoid of the appendix is reported by Uihlein and McDonald[8] as less than 1 per cent in 127 cases. Pennington and Priestley[5] summarized the literature using the combined figures of Cook and Ariel as follows. The total number of carcinoids of the small intestine was 237 in which obstructive symptoms occurred in 24.4 per cent, and metastatic lesions in 25 per cent.

Humphreys[2] feels that the thread of malignancy is inherent and the low degree of malignancy in the appendix may be due to the early removal because of symptoms referable to the appendix. Not overlooking other possibilities, it seems that early removal of the appendix would certainly reduce the number of malignant carcinoids especially when their slow growing character is considered.

Pre-operative diagnosis is for most part impossible, but the possibility of malignancy should be thought of when a tumor is found in the appendix.

The symptoms of this tumor in the appendix are no different than the chronic or acute symptoms of this organ. In the small bowel, the one major symptom, when present, is intestinal obstruction. When this occurs, the tumor has undoubtedly been present for some time. Miller and Herrmann[4] advance the presence of a coexistence of kinking and tumors of the bowel as a suggestive basis for diagnosis of these tumors. They believe with this x-ray evidence that it may be possible to diagnose these tumors especially in a middle-aged individual with a history of long standing gaseous distention, bloating, occasional diarrhea, periumbilical pain and associated weight loss.

Treatment of benign lesion of the appendix is appendectomy. Treatment of small bowel lesions is surgical. The relief of obstruction in the face of metastasis may mean years of useful life to the patient as has been previously pointed out in this paper. The multiplicity of these tumors

should be remembered as it may necessitate a removal of a considerable portion of the bowel.

Summary

1. Two cases of malignant carcinoid tumors of the ileum are reported; one with widespread metastases involving retroperitoneal nodes, liver, lungs, spleen, ribs, sternum and spine.

2. Carcinoid tumors apparently originate from the argentaffine cells of the crypts of Lieberkuhn and may be located anywhere in the gastro-intestinal tract below the esophagogastric junction, including the gall bladder.

3. All carcinoids are probably potentially malignant but because they are slow growing have commonly been considered benign.

4. There is a possibility that some carcinoid tumors of the small bowel may be diagnosed by x-ray.

5. Irrespective of the location, the treatment is surgery, even in the face of metastasis.

References

1. Hopping, Richard A., Dockerty, Malcolm B., and Masson, James C.: Carcinoid tumors of the appendix. Arch. Surg., 45:613, (Oct.) 1942.
2. Humphreys, Eleanor M.: Carcinoid tumors of the small intestine. Am. J. Cancer, 22:765, (Dec.) 1934.
3. Latimer, Earl O.: Malignant argentaffine tumors of the appendix. Am. J. Surg., 54:424, 1941.
4. Miller, E. R., and Herrmann, W. W.: Argentaffine tumors of small bowel; roentgen sign of malignant change. Radiology, 39:446, (Nov.) 1942.
5. Pennington, R. E., and Priestley, J. T.: Multiple carcinoid tumors of the small intestine. Proc. Staff Meet. Mayo Clin., 18:49, (Feb. 24) 1943.
6. Porter, Joseph E., and Whelan, Charles S.: Argentaffine tumors. Am. J. Cancer, 36:343, (July) 1939.
7. Schuldt, F. C.: Primary adenocarcinoma of the appendix and carcinoid tumors. Minnesota Med., 23:791, (Nov.) 1940.
8. Uihlein, Alfred, and McDonald, John R.: Primary carcinoma of the appendix resembling carcinoma of the colon. Surg., Obst. & Gynec., 76:711, (June) 1943.

PROVIDING FOR THE NUTRITIONAL NEEDS OF THE OLDER PATIENTS IN GENERAL HOSPITALS

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THE age level at death of our patients is ever increasing. The price many people pay for living into the seventh and eighth decades, or beyond, entails accommodation to physical restructions and mental hazards. It is not alone that they go to our hospitals for the final illness, but they go there more and more frequently for current illnesses, operations and periods of stabilization in terms of rest, diet, or physiotherapeutic regimen.

The field of general hospital service is ever changing; the social economy, industrial and agrarian, suffers dislocation even in times of peace. Many restrictions imposed by wartime may survive the ultimate peace. It behooves the hospitals to feel their way toward that service that best meets the needs imposed by events and developments. Survival is at stake, and obsolescence is invited where the fundamental issues are not given consideration. This applies as fully to hospitals as to physicians. Our privately-controlled general hospitals face an opportunity to demonstrate anew that in the presence of uncertainty, conflict and a changing order, they are able to meet the exigencies and provide the best medical-hospital treatment in the world.

Those writing upon the geriatric phases of medical care[1,2,4,5,6,8] emphasize that assembly line techniques for medical and hospital service appeal only to routinists. It is true that many routines, such as the Schick and Dick testing of children, or the administration of disease-preventing vaccines, have helped to give us our "problem of the aged" by preventing mass epidemic deaths. The medical problems that arise in this aging group call for sincere, foresighted planning. There is no shortcut which will eliminate the need for tedious individual patient study and determination of needs.

The Factor of Nutrition in Geriatrics

This heading naturally brings to mind the details of dietetics, food supplies, service, kitchens, and a multiplicity of details concerning which the medical staffs are either uninformed or needlessly critical. A more thorough analysis and an attempt at a grouping of patients according to their physical and mental status are advisable. It would then be possible to give max-

From the Department of Internal Medicine, The Duluth Clinic, Duluth, Minnesota.

imum dietary supervision to the groups when it is most productive. Adjustment has not yet been accomplished in terms of the present-day problems imposed by the shift in population toward the fifth to the ninth decades. Table I is illuminating.

The satisfactory feeding of all hospital patients calls for the utmost in planning and cooperation. The problem should be understood not on a theoretical basis but from an analysis of the conditions for which people seek hospital care. The final route of death may not be the best way to determine the major fields of illness demanding hospital bed space, but no better one is presently available.

The writer, in a chapter for The Handbook of Nutrition[9], commenting upon the growing problems of senescene and cancer and the diet factor, made these observations:

"Undernutrition reduces vitality and well-being much more than it hastens decline or senility. It is hard to believe that 'optimum nutrition' could endanger anybody's vascular system. The trouble lies in finding an 'optimum diet'—because it varies with every locale, every people, employment and individual purpose; and nature has distributed around the world the widest assortment of adequate food sources. Some may like a 'short life and a merry one'—at least at middle age that is their choice. Whatever the process by which it is brought about, 70 per cent of our Duluth Clinic patients are dying of cancer and cardiovascular-renal disease (including cerebral hemorrhage). This figure for cancer (18 per cent) is higher than the Minnesota State Board of Health figures (14 per cent) for 1941 and represents a higher than average of older people in our clientele."

Therefore, dietitians should have an awareness of the disease states that bring people under their hospital supervision.

Surgeons are battling hard against cancer. At this time their chief reliance is upon such such major operations as the partial or total removal of the stomach or colon. The nutritional preparation of these patients is equal in importance to the skill of the surgeon. It is disheartening to observe, in a current review of about 3,000 charts* where the ultimate cause of death is known, how few patients operated upon "successfully" for breast, stomach, and thyroid malignancy, die eventually of some other cause.

*This study is of patients seen at the Duluth Clinic for whom histories are on file from 1915 on; where the deaths are possible of certification, the cause thereof as listed in the Board of Health records has been tabulated.

TABLE I. DEATHS OCCURRING IN DULUTH IN 1942.

	Per Cent.
Under 1 year of age	6.95
Over 45 years of age	83.22
Over 60 years of age	64.08
Over 70 years of age	41.40
Over 75 years of age	29.87
Over 80 years of age	17.76
Over 90 years of age	1.71

Total number of deaths—1,222.

Average age at death—60.78 years.

When less than 20 per cent die under age 45, it is obvious that preventable disease (including tuberculosis) is *not* the younger age menace it was three decades ago.

This means that life prolongation has been a more conspicuous accomplishment than cure. Breast cancers have recurred with bone and other metastases after twenty years of latency!

The question of dietary adequacy for those with hopelessly incurable disease (with the possible exceptions of some of the insane) is tied up with the circumstance that existence is largely vegetative and permits little finesse. Enacting and time-consuming dietary supervision should be developed and become an accepted part of the hospital's medical and surgical therapeutic routine. But such feeding is impossible for many untidy, unco-operative and chronic illness patients.

If arrangements can be made for the segregation of patients afflicted with inoperable cancer, hemiplegia, senility and insanity under those interested and skilled in their nursing care, then the hospitals have a field where energetic individual study of each patient is instituted to accomplish the most possible in as few days or weeks as practicable. The stress of war teaches what may be done where hospital turnover counts. No center catering to a self-supporting population group can afford to be without such a medical unit.

There are many regions of our extensive country where such hospital centers should be added. These remarks, however, are addressed to the very numerous institutions already in active service under varied management. They must adjust themselves to meet the local needs. No centrally pre-arranged and superimposed bureaucratized chain of hospitals will ever function as well.

The following items, as they pertain to nutri-

tional balance from the hospital standpoint, are offered as general suggestions based upon the medical problems faced and the facts in the field of nutrition that are now known.

1. A large percentage of general hospital patients need little dietary reform. They enter in quite good health for surgical care or for acute medical control. The period involved is too short to make effective any noteworthy change in improper dietary habits and the current illness or operation negates such efforts.

2. Some patients enter the hospital for such diagnostic study as their complaints and symptoms call for. A review will indicate that malnutrition is either a primary or a decisive secondary factor. Diabetes, certain anemias, chronic arthritis, ulcerative colitis, gout, and the most common of all—malnutrition, obesity and chronic alcoholism make up this group. Concentrated dietary considerations are paramount. Morale building is vital.

3. A test comes, however, in terms of the older age group that face the issue of major surgery for cancer or obstruction along the gastro-intestinal tract (from any cause), and those who, for any reason, have suffered excessive weight loss and face death if rehabilitation is not accomplished. The methods used should stem from a proper implementing of *all* the hospital facilities; but the *correlation between the clinical laboratories and the department of dietetics best shows the way*. These subheadings illustrate where and how rehabilitation and nutritional balance yield large dividends in lessened mortality and morbidity.

(a) No patient with a striking weight loss should be submitted to surgery for cancer of the gastro-intestinal tract without first adequately restoring his blood and tissue proteins. When this lesson is heeded no one will longer retain the age-old suspicion of protein, or advise so many older people to "leave meat out." The laboratory is able through its blood bank to meet any emergency. The parenteral solutions of the amino acids are being constantly made safer; reactions from plasma and serum are rarely encountered. Exact estimations in the laboratory, including daily weighing of the patient, give an objective graph wherewith to fortify the judgment of the physician. A normal person of average weight needs at least 80 grams of protein for body maintenance. At the first evidence of illness, protein is often the first element omitted; when the reserves are depleted every possible means must be utilized to restore them.

(b) Diet lists for specific diseases should be eliminated. This would challenge attendants to develop an elemental understanding of the nutritional needs and status of each patient regardless of age or presenting symptoms. If the nutritional status of each patient is understood and proper measures taken to put him into protein (nitrogenous) balance before any major surgery is attempted, then the staff and hospital have the key to the nutritional problem in its most practical phase. When the obsolete diet lists and texts are thrown out then our aging patients will get the protein they need, together with a *balanced* natural selection; omnivorousness is the goal.

(c) A gastric or bowel cancer patient has early used up his fleeting carbohydrate stores. With a priority system far more expeditious and automatic than that of any "new deal," the body starts out to conserve protein by shifting to a release of energy from stored fat. For a time living on this "money in the bank" is possible, but hazardous. The liver loads up with fat, and does so doubly certainly if the patient is either an alcoholic or has congestive circulatory failure. Sooner or later he lives on his invested capital—his tissue protein—if for no other reason than to get its content of glucose for muscle contraction. It is not long before the liver fails in synthesizing the blood and tissue fluid proteins. Edema easily supervenes. Homeostatic equilibrium is challenged on every side. Under these circumstances postoperative complications (always multiplied with the elderly) devestatingly obtrude. The hypoproteinemia inhibits wound healing and mixed avitaminoses incite bleeding.

(d) Here enters the hospital laboratory and blood bank. Immature as much of our testing for and knowledge of malnutrition is known to be, still relatively simple tests develop understanding and help decide the methods and agents (whole blood, electrolytes, plasma, serum and parenteral amino acids) needed. Then the normal route of ingestion must not be forgotten. Few patients are unable to take large amounts of milk powder (casein), gelatin, egg, and other pabulum rich in protein. Wangensteen's meth-

od of accurately weighing his bed patients daily is the best device to know where the patient stands in terms of his protein economy and water balance.

(e) The less dramatic nutritional imbalances, which are so obviously a part of many disorders calling for hospitalization, have been mentioned so commonly that repetition is not called for here.

There are the postinfectious sequelæ, some of them the result of the therapy itself, as in pneumonia or the various fevers. Pregnancy provides certain baffling anemias. Some elderly people, "living off a shelf," have low blood levels which a high protein diet, with or without hydrochloric acid and thyroid extract, will promptly rehabilitate. Peters has recently elaborated upon this in his article on "A New Frame for Metabolism."[3] This throws much light upon how the body puts into play its food priorities. One learns from it the meaning of "starvation diabetes," and, indirectly, that as the liver is allowed its quota of storage glycogen, so all vital functions prevail and prosper. Many elderly diabetics are out of dietary balance and adjustment under guidance is their chief need.

(f) Since we have life extension—almost superabundantly—it is incumbent upon physicians to teach people how to retain as much vigor and self-sufficiency as possible. Their aim is indeed: "To add more life to the years rather than more years to life." The hospital laboratories and departments of dietetics greatly aid in this objective.

(g) For a long time it was not fashionable to admit having a good appetite. The iniquitous coffee and slice of toast breakfast became the vogue. Start the day with a good breakfast.[7] Add eggs, ham, bacon, fish or a chop (after the war) to your coffee, orange juice and toast. Carry this habit into your old age. You will be prepared to withstand its vicissitudes.

(h) Underweight and obesity provide challenging problems for dietitians. Many underweight individuals are still well nourished; it is somewhat startling to realize that many of the obese are malnourished. More than a superficial analysis is necessary to understand all that these statements connote. The obese individual placed upon a reduction diet automatically enters upon a period of utilizing the stored fat and may be quite uncomfortable because of the switch to a "high fat diet." While it is a disaster for a growing child to lack at any period "the essential fatty acids," there is a growing feeling of uncertainty in terms of how inadequately some in the older age group "disperse cholesterol." Dietitians are quite familiar with the close relationship between diabetes and arterial decay and its most vicious regional implant, namely within the coronaries. There is among the elderly, therefore, much more need to be conservative in the intake of fat than to be limited in the ingestion of protein.

References

1. Boas, Ernest P.: Treatment of the Patient after Fifty, Chicago: Year Book Publishers, 1941.
2. Cowdry, E. V.: Problems of Aging, Baltimore: Williams and Wilkins Company, 1939. (Josiah Macy Jr. Foundation Publications).
3. Peters, J. P.: New Frame for Metabolism, Yale J. Biol. & Med., 13: 739-758, (July) 1941.
4. Simms, Henry S.: The problems of aging and of vascular disease. Science, 95:183-186, (Feb. 20), 1942.
5. Thewlis, M. W.: Geriatrics a special branch of medicine. M. Rec., 153:433-435, (June 18) 1941.
6. Thewlis, M. W.: The Care of the Aged (Geriatrics). St. Louis: C. V. Mosby Company, 1941.
7. Thorn, Geo. W., Quinby, John T., and Marshall, Clinton, Jr.: A comparison of the metabolic effects of isocaloric meals of varying composition with special reference to the prevention of postprandial hypoglycemic symptoms. Ann. Int. Med., 18:913 (June), 1943.
8. Tuohy, Edward L.: Geriatrics in relation to an adequate energy-producing and protective diet. J.A.M.A., 114: 223-227, (Jan. 20), 1940.
9. Tuohy, Edward L.: Feeding the aged (special article). Handbook of Nutrition: J.A.M.A., 121:42-48, (Jan. 2), 1943.

USE OF BORIC ACID OINTMENT ON BURNS IS DANGEROUS

A warning against the use of boric acid ointment or saturated solution on burns was given by Lieut. Carl C. Pfeiffer, Ensign Lois F. Hallman and Lieut. I. Gersh, of the U. S. Navy at the meeting of the American Medical Association.

Enough boric acid to produce poisoning can be absorbed from 10 per cent boric acid ointment, they found. As much as 75 per cent may be absorbed when a 5 per cent solution is used to wash out body cavities. Repeated doses result in the acid being deposited in the brain, fat and liver. Death results from a shock-like syndrome after large doses and from general inanition after medium doses.

After the Cocoanut Grove disaster in Boston, when boric acid ointment was used under pressure dressings on the victims' burns, the National Research Council issued an official recommendation for its use on burns, but this has since been withdrawn.

Since boric acid is a weak antiseptic, the Navy officers suggest use of more active and less potentially harmful ones.—*Science News Letter,* July 15, 1944.

THE RELATIONSHIP OF DESCENSUS UTERI TO PELVIC SIZE AND MORPHOLOGY AND TO CERTAIN OBSTETRIC AND ECONOMIC FACTORS

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IT IS generally taught that most uterine prolapses originate from childbirth injuries. That this is not the sole factor in the production of various degrees of prolapsus uteri is demonstrated by the occasional nullipara and perhaps the occasional multipara who presents a prolapsus without any other evidence of pelvic relaxation. At least some of these, as with the instances of urinary incontinence without anatomical urethral sphincter relaxation, must be of neurogenic origin, although few present spina bifida or other evidence of neurologic lesions. There are undoubtedly many and perhaps varied etiological factors in the production of descensus uteri. For instance, obvious differences have been observed in the white and colored races.

Everett[5] comments on the relative rarity of conditions requiring vaginal plastic work in the colored patient at the Johns Hopkins Hospital. Indeed, in reporting on the end-results from one operative procedure for uterine prolapse and cystocele, he records that only eight of sixty-eight patients were Negro and this is from a service in which the colored patients outnumber the white by almost two to one. This colored clientele is known to have small pelves, many with rickets, and they are prolific, giving birth to about average-sized fetuses with not infrequent dystocia. They live in crowded residential quarters, are not well fed and work chiefly as domestics. On the gynecological ward of the University of Minnesota Hospital, on the other hand, there are many patients admitted for repair of birth trauma. They come from a hardy stock, many Scandinavian, chiefly rural, whose babies are above average in size, but in whom pelvic dystocia is rare. These differences probably exist between other races or groups.

The present study was undertaken in an attempt to determine, if possible, the role played by pelvic size and morphology in the production of prolapsus uteri. Simultaneously, the obstetrical histories and social or economic statuses were analyzed. Early in the study it became apparent that the available material fitted a fairly uniform pattern, so the study was terminated with the twenty-fifth patient.

Consecutive cases were selected and included all admitted to the service with some degree of prolapsus uteri or with a third degree descensus. Lesser degrees of descensus uteri were not included. Each was subjected to stereoscopic roentgen pelvimetry and to clinical mensuration of the pelvis before operation. Pelvic morphology was described according to the standards and classification of Caldwell and his coworkers.[1] Roentgen mensuration was carried out on the stereoscopic anteroposterior and lateral films by the "precision" method now routinely used for obstetrical pelvimetry in this clinic and which has previously been described.[3]

The distribution of the material according to extent of descensus or prolapsus uteri, associated pelvic relaxations, and extragenital diseases, is shown in Tables I, II, and III, respectively. Third degree descensus was diagnosed when the cervix, upon straining or with traction upon it, came to the vulvar outlet; first degree prolapsus, just beyond the outlet and complete prolapse or procidentia upon complete delivery of the corpus uteri.

Only one patient had no associated pelvic relaxation and she was a fifty-six-year-old spinster with third degree descensus who had spent much of her life doing heavy housework and caring for an invalid relative. Three years before admission she had had a colpoperineorrhaphy because of a first degree descensus which was thought to have been present for twelve years. One-half of the patients had associated hypertensive cardio-vascular disease. In only a few of these was that disease severe, but it was never considered a contraindication to vaginal plastic procedures since all these operations are performed under local anesthesia.

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This study was supported by a grant from the Graduate School of the University of Minnesota and greatly aided by the coöperation of Dr. Leo G. Rigler and his technical staff of the Department of Roentgenology.

TABLE I. EXTENT OF DESCENSUS OR PROLAPSUS UTERI

Degree of Descent	Patients	
	No.	Per Cent
Third degree descensus	12	48
First degree prolapsus	8	32
Complete prolapse	5	20
Total	25	100

TABLE II. ASSOCIATED PELVIC RELAXATIONS

Relaxations	No. Patients
None	1
Cystocele and rectocele	24
Plus enterocele	3
Plus retroversion of uterus	2
Plus myomata uteri	2
Plus adenomyosis	1
Plus cervical hypertrophy	9
Plus urinary incontinence	18
Total	25

TABLE III. EXTRAGENITAL DISEASES

Disease	No. Patients
Hypertensive cardio-vascular	12
Microcytic hypochromic anemia	1
Diabetes	1
Umbilical hernia	2
None	9
Total	25

TABLE IV. ROENTGEN DIAGNOSIS OF PELVIC SIZE

Pelvic Size	Patients	
	No.	Per Cent
Above average or large	10	40
Average or normal	14	56
Borderline	1	4
Total	25	100

TABLE V. MORPHOLOGICAL TYPES OF PELVES

Gynecoid		14
pure	11	
with narrow forepelvis	2	
with android tendency	1	
Platypelloid		10
pure	4	
with gynecoid tendency	6	
Android		1
with gynecoid tendency	1	
Total		25

The age range of patients at the time of onset of symptoms or signs of descensus uteri and the age at the time of hospitalization for therapy are given in Figure 1. The average age at the time of appearance of descensus uteri was 42.8 years with extremes of twenty-one and sixty-three years. Age *per se*, then, does not appear to be a factor in the production of descensus uteri. Neither is age at the time of delivery of the first term pregnancy a factor for at that time 20 per cent of the patients were fifteen to nineteen years old, 60 per cent were twenty to twenty-four years, 4 per cent, twenty-five to twenty-nine years, and 12 per cent, thirty to thirty-four years. These patients ranged between twenty-four and sixty-four years in age when admitted for therapy with an average admission age of 53.9 years. The average duration of symptoms before hospitalization was 11.5 years with extremes of one and thirty-nine years.

Clinically, all pelves which were completely measured (twenty) were found to be normal in size. The x-ray determination of pelvic size is given in Table IV where it will be seen that not a single pelvis could be classified as contracted and only one was borderline in size, all others being normal to large. None was considered obstetrically undesirable. The borderline pelvis was pure platypelloid in type with measurements slightly below normal—greatest transverse diameter of inlet 13.1 cm., ischial spinous diameter 10.3 cm., intertuberous diameter 10.0 cm. and obstetrical conjugate 9.3 cm. She was a para 9-1-2-6* who had had two forceps deliveries and one breach extraction with all three of these being stillborn or dying within seven hours of birth. One of these weighed more than eight pounds. No other data is available but all must be considered obstetrical accidents. Average important measurements for this whole group with their accepted normals in brackets were: transverse of inlet 14.0 cm. (13.5), ischial spinous 10.8 cm. (10.5), intertuberous 11.7 cm. (greater than 10.0), obstetrical conjugate 11.3 cm. (at least 11.0 for all pelvic types except platypelloid in in which 10.0 is accepted) and C.D. 12.8 cm. (11.75).

The morphological types of pelves observed in these patients are given in Table V. Caldwell and Moloy's classification[1] was used and the table

*Nine term deliveries, one premature delivery, two abortions, and six living children.

includes parent and mixed types of which there were fifteen patients with pure and ten with mixed types. There were no anthropoid pelves which may not be surprising since these patients

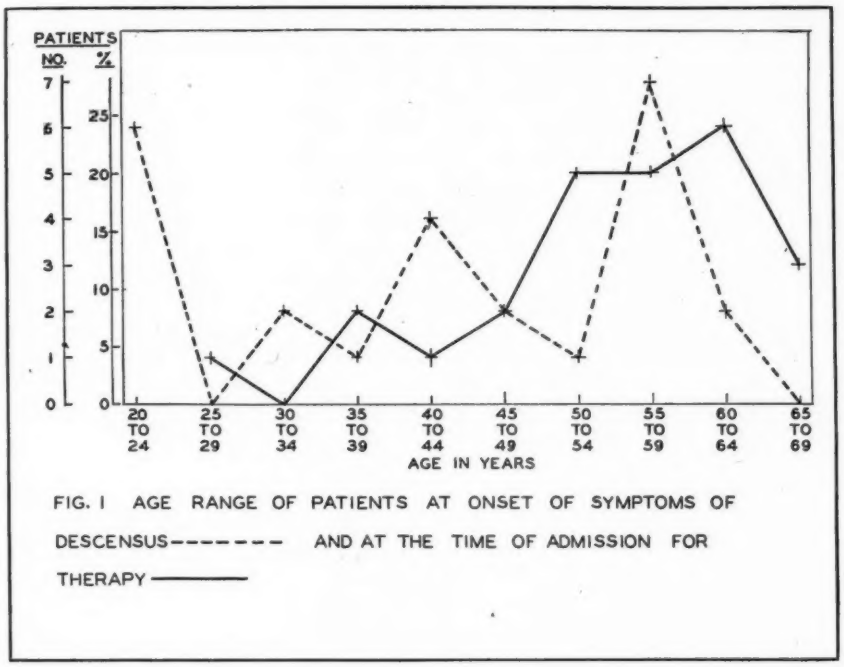

FIG. 1 AGE RANGE OF PATIENTS AT ONSET OF SYMPTOMS OF DESCENSUS- - - - - - - AND AT THE TIME OF ADMISSION FOR THERAPY ———

were all from low-income levels and Thoms and Greulich[8] have shown that the incidence of pure and primary anthropoid pelves is higher in those patients from the upper social and economic strata. It may be significant that no pure and only one primary android pelvis appeared. Moreover, only one other pelvis showed secondary android characteristics.

Roentgenologic findings other than pelvic form included nine cases in which there was certain, though never marked, rickets. This diagnosis was made in each case on the basis of the typical disturbances in the curvatures of the sacrum. In a few instances rachitic changes in the pelvis other than in the sacrum were noted but were never as outspoken as in the sacrum. Four pelves showed high assimilation. One was slightly asymetrical but classified instead according to the other parent-type characteristics found in it. There were no instances of spina bifida. However, in six the hiatus sacralis involved the lower two or three sacral vertebræ. According to anatomy texts[2,6] the lower part of the posterior wall of the sacral canal is deficient owing to the absence of laminæ and spine of the fifth vertebra always and, very often, of the fourth also. In two of our six cases, the third sacral vertebra was similarly deficient. The significance of these minor developmental anomalies in the lower end of the vertebral column is not known. It would seem possible that they might be associated with other anomalies in development of the neural canal which cannot be recognized clinically or roentgenologically but which might conceivably be, like spina bifida, responsible for the production of pelvic relaxations on a neurogenic basis.

Age of the patient at the time of the menopause was compared with data supplied by Novak[7] on normal menopause in a group of Baltimore women. The average age of our patients at the menopause was 48.27 years with extremes of thirty and sixty-three years. Five in the group studied had not reached the menopause and at the time of admission for therapy were twenty-four, thirty-five, thirty-seven, forty-four and forty-five years of age. The extremes in Novak's series were twenty-seven and fifty-four years. Except for a higher incidence in our older age

group there is no significant difference between the two series.

Parity of the patients at the time of onset of symptoms of descensus uteri and at the time of admission for therapy were investigated. Seven patients changed parity status between these two events. Each of three had two subsequent pregnancies and one each had one, four, six, and seven term pregnancies subsequent to the development of symptoms of descensus uteri but before repair procedures were undertaken. The twenty-four parous women had 127 term or near term deliveries for an average of 5.29 viable children but they had only 103 or an average of 4.29 before the onset of symptoms. Everett[5] does not make these distinctions but notes that the average number of term deliveries in his series of sixty-eight was 4.3 including one nullipara and four patients who had ten or more children.

Operative vaginal deliveries were not found to be important factors in the production of descensus uteri. One patient was a nullipara. Of the remaining twenty-four parous women, thirteen had twenty-one operative deliveries before the onset of symptoms and a total of twenty-seven before hospitalization for treatment of descensus or prolapsus. Only three patients changed status with respect to operative deliveries and they had one, two and three forceps deliveries respectively followng the onset of symptoms. All operations were forceps deliveries, none identifiable as to type, except for two which were breech extractions.

Graphs of physical build of this group of patients in terms of weights at the time of the menopause and at the time of hospitalization were made. These were based on standard insurance weights[4] for their respective heights and ages. They were expressed in terms of percentages of the average for sex, age, and height. Deviations of 20 per cent from the averages were considered within normal range which is the range adopted by insurance companies.[4] On these graphs it was found that the majority of the women in this study fell within the normal limits for stature and there was no preponderance of over or underweight individuals. The overweight individuals represented greater percentages of deviation from the normal than did the underweight ones. The distribution was equal on both sides of the average value.

The operative procedures carried out in treatment of these cases of descensus and prolapsus are listed in Table VI. The operation of choice has been colpoperineorrhaphy with ventral fixation but in slightly more than one-half of the cases other operative procedures were elected because of diseases of uterine corpus or cervix or because of the apparent impossibility of sufficient mobilization of the uterus to allow fixation to the anterior abdominal wall. No attempt has been made to evaluate the adequacy of these various procedures since the postoperative follow-up period in many has been too brief for an accurate analysis.

TABLE VI. OPERATIVE PROCEDURES CARRIED OUT IN TREATMENT OF PROLAPSUS UTERI

Procedure	No. Patients
Colpoperineorrhaphy alone	2
with interposition operation	3
with vaginal hysterectomy	3
with ventral fixation	11
with cardinal ligament shortening	5
Pending	1
Total	25

The economic status of this group of patients was determined in order to evaluate the type and amount of physical activity indulged in before appearance of symptoms of descensus. All were ward patients on a service with a ward to private patient ratio of 7:1 and had done considerable hard work. Nine had done all ordinary household duties as housewives for small to large families. This did not include regular help with these labors and the majority returned to their duties within one week of the time of delivery.

The nullipara had for many years cared for an invalid relative and this necessitated lifting a heavy adult as well as heavy household duties in a home without any modern conveniences. The remaining fifteen had lived on farms where their duties included not only above average household tasks that necessitated heavy lifting but also had worked in the fields at labors generally done by men. The relatively few admissions on the private service for repair of prolapsus have been notable. Excessive physical activities including heavy lifting and especially after brief puerperia before supporting structures have had an opportunity to involute would seem to be an important factor in the production of descensus uteri.

Conclusions

1. To determine the possible relationship of pelvic size and form to the development of descensus uteri, twenty-five consecutive admissions for repair of third degree descensus uteri or of prolapsus were subjected to complete roentgen pelvimetric study. Evaluation of stature, menstrual and obstetrical histories, and of economic status are included.

2. The following factors do not appear to play a role in the production of descensus uteri; age at onset of symptoms, age at time of first term delivery, age at menopause, parity before onset of symptoms, number of operative vaginal deliveries, and presence of open sacral canal.

3. Parity with associated birth trauma is almost always an accompaniment of descensus or prolapse.

4. Undesirable obstetrical pelves from the point of view of either size or morphology were not found associated with descensus.

5. Descensus uteri is much more common in low income group patients.

6. Hard physical labor especially when resumed shortly after delivery is probably an important factor in the subsequent appearance of descensus or prolapsus.

References

1. Caldwell, W. E. Moloy, H. C., and D'Esopo, D. A.: Anatomical variations in the female pelvis and their effect in labor with a suggested classification. Am. J. Obst. & Gynec., 26:479-505, 1933.
2. Cunningham Text Book of Anatomy. Edited by Arthur Robinson, 6th Ed., p. 105. Oxford Univ. Press, 1931.
3. Dippel, A. L., and Delfs, E.: The accuracy of roentgen estimates of pelvic and fetal diameters. Surg., Gynec., & Obst., 72:915-922, 1941.
4. Dublin, L. I., and Marks, H. M.: The build of women and its relationship to their mortality. Association of Life Insurance Medical Directors of America, 1938.
5. Everett, H. S.: End-results with the Watkins interposition operation. Surg., Gynec., & Obst. 61:403-405, 1935.
6. Morris, Human Anatomy. Edited by C. M. Jackson. 8th Ed. P. Blakiston's Son & Co., 1925.
7. Novak, E.: Menstruation and Its Disorders, Gynecologic and Obstetric Monographs. p. 126. New York: D. Appleton & Co., 1921.
8. Thoms, H., Greulich, W. W., and Twaddle, R. C.: A study of pelvic type and its relationship to body build in white women. J.A.M.A., 112:485-495, 1939.

ORIENTAL DISEASES

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IT is high time that the medical profession begins to do more thinking along the lines of Oriental medicine. For this reason this work has been prepared in the hope that my experience treating large numbers of Chinese in the middle of the Honan Province of China between the years of 1931 and 1942 will stimulate your interest in this field of medicine. As a medical missionary I prepared myself for the work by taking a summer course in Oriental diseases at Peking, China, using textbooks on Oriental medicine by Manson-Bahr and later by Stitt. It must be understood that I was located on the frontier of medicine. There were no laboratory facilities except for what little I had time for and consequently much of my therapy was by trial and error. I will limit my discussion to two groups of diseases, first, malaria and kala azar, and second, the dysenteries, amebic and bacillary.

Upon finding the relationship between the mosquito and malaria Ronald Ross wrote: "This day, relenting, God has placed within my hand a wondrous thing, and God be Praised, at His command seeking His secret deeds, with tears and toiling breath I find thy cunning seeds, O million murdering death!"

The clinical manifestations of malaria are as varied as is possible in any one disease. Many individuals may harbor the malarial parasites and not present any clinical manifestations, or merely show general malaise, headaches and mild manifestations of very little importance. There is a selective localization of parasites in the blood-forming organs, including the bone marrow, spleen and liver, causing cloudy swelling, fatty degeneration and even infarction in these organs. The same occlusion of capillaries has been demonstrated associated with small hemorrhages in the brain, meninges, heart, gastro-intestinal tract, kidneys, pancreas, thyroid, lungs and adrenals.[7] If these pathological manifestations are unusually severe in any of these various organs the clinical manifestations may be correspondingly outstanding even to the point of greatly confusing the physician and making the diagnosis difficult. Cerebral malaria with coma is a good example

Read before the St. Luke's Hospital medical staff meeting, Duluth, February 17, 1944.

of this type. In one such case I obtained a history of malaria and gave a large dose of quinine intravenously with good results. If the parasites are in the bronchial tree they may cause asthmatic symptoms. Cardiac symptoms sometimes are predominant and on other occasions where the intestinal mucosa is primarily involved the patient may suffer from diarrhea and thus his condition may be diagnosed as dysentery.

The typical picture of tertian and quartan malaria begins with malaise, headache, chills every two or three days at which time the pulse rate and blood pressure are raised as well as the temperature. The chills last from twenty to sixty minutes associated with profuse sweating, fever crisis followed by a feeling of well-being. Other common symptoms include frequency of urination, nausea and vomiting. It is entirely possible that our soldiers may show a very different and bizarre clinical picture as compared with the classical malaria which I generally found in the Chinese soldiers who may have some immunity to the disease. In the subtertian type of malaria the chills were not so severe and fever was irregular. Here marked prostration was characteristic and there was no feeling of well being between the attacks as found in the other regular types of malaria.

Malarial cachexia is frequent in the Orient. These patients become very anemic. I have prescribed 100 quinine and 100 iron pills to such cachetic women which to their great joy results in their resumption of menses and the possibility of their giving birth to a Chinese boy.

It must be remembered that tropical diseases have a special tendency to result in a positive Wassermann and Kahn test. Some authorities state that as high as 80 per cent of malaria patients sometime or other have a positive Wassermann or Kahn test.[7] Other tropical diseases often giving biologically false positive syphillis tests[3] are yaws, (over 80 per cent), mal del pinto (75 per cent of cases), bejel (Syria) leprosy (40-50 per cent of cases), recurrent fever, leishmaniasis, and trypanosomiasis.

Many authorities agree that there may be a natural immunity against malaria and that an active immunity must be worked up by the body against the disease. I have, for example, seen missionaries living under identical conditions and equally exposed to the mosquito, one suffering violent chills and malaria symptoms while the other may go for years without any signs of attack.

Treatment.—Prophylactic or suppressive treatment includes the giving of small doses of quinine or atabrine during the week. The United States Army is using 0.1 gram atabrine six days a week for suppressive treatment in some regions while 0.1 gram b.i.d. on the first and fourth days of each week is used in other regions. In China we have often used 12 to 20 grs. of quinine on Monday and Tuesday of each week, thus interrupting the five-day cycle of germination of the malaria germ. Prophylactic therapy seems to keep away the clinical symptoms and must be resorted to, for example, when armies are on the march. Yet there is danger expected with this form of treatment.[7] It may mask symptoms while the infecting plasmodia insidiously do their damage in the blood-forming organs and deeper structures. The natural defense mechanism may be impaired by the therapy and a serious attack of the disease may be precipitated. This is also the underlying idea of the term "quinine fast," when we were warned against treating malaria with too small a dosage.

We are still looking for the ideal drug in malaria. Some cases respond to quinine and some to atabrine and others to a combined treatment. Quinine and atabrine both destroy schizonts or asexual forms. Plasmoquin is used for the sexual or nonclinical forms (gametocytes). The army dosage[2] of quinine used therapeutically for malaria is grs. XV t.i.d., p.c. for two days, then grs. X t.i.d., p.c. for five days. This may be given intravenously in 400 c.c. of water. The dosage of atabrine is gr. .III, q. six hours for five doses, then grs. 1½ t.i.d., p.c. Atabrine may be given intramuscularly in 5 c.c. of water. One-third of the atabrine patients become yellow. They see yellow and have yellow urine. Atabrine poisoning is manifested by nausea, abdominal cramps, headache, diarrhea and depression or other mental symptoms. Atabrine, an acridine dye, may damage the liver and should be used with caution in the presence of liver disease. We used it in China in normal obstetrical cases having malaria. Neosalvarsan not only has a tonic value appreciated by many but also appears to cure some cases of malaria.

I would like to point out that in 1870 there was a committee from the American Medical As-

sociation which advised the United States government to grow quinine trees in Southern California, Arizona and New Mexico. This advice was unfortunately tabled. What this shortsightedness will cost our nation in lives and possibly battles only the future will know.

A typical case of kala azar or leishmania Donovani might be a boy of from ten to twelve years of age with a protruding abdomen and with a greatly enlarged spleen. He often has sores about his mouth and on his legs. Generally he has bronchitis, a pasty anemic complexion as well as a thin blood. There is a marked leukopenia. This disease is caused by a protozoan organism. They are found in the endothelial cells lining blood and lymph vessels, especially in the spleen, liver and bone marrow. A sternal puncture using a stout, short needle is used to find the organisms and establish a diagnosis. I accidentally developed my own method of finding the organisms. One day while in a hurry I dropped a little Wright's stain on a thick blood smear and examined it under oil immediately. I found the organisms moving about and thus I was certain I wasn't looking at any misleading precipitates. The liver is often enlarged and the fever is characterized by a double or triple peak of fever in twenty-four hours. There may be two to six weeks of remissions of afebrile periods.

Ninety per cent of the patients who receive no treatment die in from two months to two years. Neostam and neostiboson are specific drugs for this disease to which the patient responds if he does not come too late. Treatments may have to be repeated after a rest period. Neostam or neostiboson 1.5 to 2.5 grams for children, 4 to 5 grams for adults given over a three- to four-week period, preferably parenterally, is advised. In India and Assam a similar drug is called ureastibamine. Tropical sores are often related to leishmania Donovani and respond to the treatment with these drugs. Certain types of cancrum oris seem often to be associated with leishmania. In these cases I like to supplement the specific drugs with vitamins. Sulfonamide powder is also said to be good.

The dysenteries are indeed common in the Orient and many of our returning soldiers may be discharged from the Armed Forces only to later develop clinical manifestations of these diseases. Incidentally it is variously estimated that from 5 to 20 per cent of the population of the United States are infested with entameba histolytica. Many of these victims are carriers and may have no special clinical manifestations.. The typical cases of amebic dysentery as I saw them in China had a rather slow onset with moderate tenesmus, gradual appearance of blood in the stool, low grade toxemia and dehydration, rarely liver and pulmonary involvement and rarely perforation. Whereas the cases of bacillary dysentery had a sudden onset of their diarrhea generally with severe tenesmus and early appearance of blood and ulcerations and very rarely perforations as compared with the amebic dysentery. Toxemia and dehydration were more marked and there was no abscess formation in the liver or lungs. The therapeutic use of emetin was also a means of differentiation of the two conditions. A great many victims of amebic dysentery suffered from nothing more than vague abdominal pains. Yet an examination of the stools with eosin-iodine stain revealed the amebic cyst.

Two groups of drugs were used for amebic dysentery including, first, the arsenicals: treparsol, carbarsone, and stovarsol. The other group were the oxyquinolines, including yatren, vioform and diodoquin. I preferred the carbarsone, 4 grs. b.i.d. for ten days to begin the treatment. Emetin was simultaneously given by deep subcutaneous injection 8 to 10 grs. over a ten-day period. According to Beckman[1] ⅔ gr. b.i.d. for three days is advisable at the beginning of treatment. I have seen one reaction to emetin so I prefer to interrupt the treatment every three or four days if a high dosage is being used. Many authorities believe that no further emetin should be given until after a six- to eight-week rest period. In case of an amebic liver abscess, however, it may be necessary to resume a course of emetin after a ten-day rest period. Following the carbarsone by mouth it is well to rest ten days, then give a ten day treatment of oxyquinoline, again interrupting ten days and terminating with carbarsone for ten days.[1] Yatren 2.5 per cent in 300 c.c. retention enemas and ipecac bismuth combinations by mouth are supplementary methods. A low residual diet is advisable and the patient receiving emetin should be hospitalized.

For bacillary dysentery succinylsulfathiazole is the latest promising drug. Even in high dosage a concentration of not more than 2 mgs. per cent may be found in the blood. Even with this low concentration, however, there may be toxic re-

actions. Twenty cases were reported as responding well to this drug.[4] In a group of fourteen children with Flexners dysentery bacillus infection there were abdominal cramps and vomiting during the first twenty-four hours with temperatures reaching 100 to 104 degrees.[6] After four days of treatment 90 per cent of the children were apparently cured. The drug is less effective in chronic and recurrent forms.

Summary

1. We may expect a number of our soldiers and sailors to return to their homes in apparent health only to break down, generally after prolonged chilling or fatigue, with malaria or dysentery in bizarre and atypical clinical manifestations as well as in the typical forms.

2. The great difficulty of finding the specific organisms of malaria and dysentery (especially the latter), in some cases renders a trial of specific therapy justifiable.

3. Caution is expressed in the interpretation of a positive Wassermann, Kline or Kahn test in patients who may have some oriental disease.

4. There exists a danger of transmission of malaria in blood or plasma transfusions.

5. Prophylactic or suppressive treatment may mask a deep-seated insidious malarial process which may later prove very difficult to control.

References

1. Beckman, Harry: Treatment in General Practice, 4th Edition. Page 45. Philadelphia: W. B. Saunders, 1942.
2. Bieter, Ray N.: Treatment of Malaria. Speakers Library Series—Malaria. Minnesota State Medical Association.
3. Physicians Handbook, 2nd Edition, Page 153, Chicago: Unisersity Medical Publication.
4. Poth, E. J., Chenoweth, B. M., and Knotts, F. L.: A preliminary report on treatment of bacillary dysentery with succinylsulfathiazole, J. Lab. & Clin. Med., 28: 162, (Nov.) 1942.
5. Riley, W. A.: The Epidemiology of malaria. Speakers Library Series—Malaria. Minnesota State Medical Association.
6. Smyth, C. J., Finklestein, M. S., Gould, S. E., Koppa, T. M., and Leeder, F. S.: Acute bacillary dysentery (Flexner): Treatment with sulfaguanidine and succinlysulfathiazole. J. A. M. A., 121: 1325, (April 24) 1943.
7. Talbot, D. R.: News aspects of malaria. J. A. M. A., 123: 192, (Sept. 25) 1943.

WAR AND PESTILENCE

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INASMUCH as we are in the midst of the most widespread and greatest war in all history, the subject of the relation of disease to war should be of medical interest. It will be my purpose to show how pestilence among troops and spread by troops to civilian populations has been more devastating throughout world history than actual warfare with the possible exception in the case of the Russo-Japanese war. The relation of disease to the present conflict will also be briefly considered.

To go back to the Peloponesian war between Sparta and Athens which began in 430 B.C., Athens was at its height of power and civilization at the period known as the Golden age of Pericles. She controlled the Mediterranean and enjoyed an extensive commerce with the countries bordering on the Mediterranean. This was the period when literature, philosophy and art flourished in Athens. Sparta declared war on Athens in 430 B.C. and besieged the city. Some 200,000 people from the surrounding country crowded into the city of Athens, normally a city of 200,000. Pestilence spread in the city. The only description we have of the disease is that of Thucydides who was not a physician. He described the affected as suffering from thirst, their bodies red and livid and marked all over with pustules and sores. He did not describe buboes and from the description the disease may have been smallpox but historians believe it was probably bubonic plague. The Spartans feared to enter the city on account of the plague and retired, not, however, before Athens was disrupted by the pestilence. Later Pericles and members of his family died of the disease and Athens was sacked and there can be no doubt but that pestilence contributed largely to the downfall of the Athenian power and civilization.

Smallpox. Medical historians believe that smallpox had its native habitat in central Africa and in India. It may have been the pestilence that played such havoc with Athens, having been transmitted to Athens from Africa through commercial routes. History relates that in 164 A.D.

Presidential Address before the Ramsey County Medical Society, Saint Paul, Minnesota, January 25, 1943.

the Parthians attacked Syria and the Roman Emperor Marcus Aurelius Antoninus sent his general, Avidus Cassius, with an army to Syria. A few days after the triumphant march of the returned troops through the streets of Rome an epidemic broke out among the soldiers. The disease raged for fifteen years and in a later campaign against the barbarian Marcomanni, Marcus Aurelius himself died of the disease on the outskirts of what is now Vienna. From the description given by Galen who was Aurelius' physician, the disease was probably smallpox.

Smallpox was first reported in America only fifteen years after its discovery. In 1520 the Spaniards carried the disease into Mexico and some three million natives are said to have died of the disease.

Smallpox first appeared in Boston in 1649. In 1775 after the battle of Bunker Hill the disease broke out among the British troops which were occupying the city. Neither the colonial forces under Washington which were besieging the city nor Howe, in command of the British troops, chose to attack, probably because of the epidemic. After the British evacuated the city Washington permitted only 1,000 of his troops who had had smallpox to enter the city. The British army at that time had adopted the practice of inoculation with smallpox quite different from vaccination, in that material from a pustule from a mild case of smallpox was inoculated into the skin of the individual and it may have been that the 2,000 of Howe's troops sick with smallpox might well have included those who had been inoculated.

The story of the development of vaccination against smallpox is interesting and merits a recital. In 1716 Lady Mary Montague while in Constantinople had her three-year-old son inoculated from a mild case of smallpox. Evidently this was not an unusual practice in the near East at that time. Following this the Prince of Wales had his two children inoculated after trying the procedure on six condemned criminals.

During an epidemic of smallpox in Boston in 1721, Cotton Mather, a Boston physician, read of the procedure in the Transactions of the Royal Society of London and wrote articles advocating inoculation and published them in the newspapers. Dr. Zabdiel Boylston of Boston was much impressed and tried it on two negro slaves and his son.

Before the Revolution the state of Virginia had enacted a penal law prohibiting smallpox inoculation. As a result of unfavorable experience with smallpox among his troops, Washington challenged the law and adopted inoculation for his troops with good results.

At the time of Charles II of England, Barbara Villiers (the Duchess of Cleveland), a notorious but beautiful woman in his court, was asked whether she was not afraid she would contract smallpox and becoming disfigured lose her influence with the King. She is said to have stated she had no such fear because she had had cow pox. One hundred years later Edward Jenner heard a young woman make the same statement and investigated. He was a pupil of John Hunter and is said to have told his preceptor that he thought smallpox and cow pox were the same disease. Hunter made the famous statement: "Don't think, try! Be patient. Be accurate." Later in 1796 Jenner vaccinated John Phipps with cow pox and was unable to inoculate him later with smallpox. Later he repeated the experiment with three others and proved them immune. The Royal Society refusing him publication of his observations, in 1798 he published them in pamphlet form.

In America, Dr. Benjamin Waterhouse of Boston published an article in a newspaper entitled "Something Curious in the Medical Line" after hearing of Jenner's work. Later he secured some virus, vaccinated his own children and sent some virus to President Jefferson who vaccinated members of his family.

In May, 1776, the colonial troops under Benedict Arnold and Montgomery invaded Canada and besieged Quebec. During the siege 900 of the 2,000 colonials became sick for the most part from smallpox which forced their retirement. Who knows to what extent Canadian history was affected by this epidemic of smallpox.

In 1779 while the British were occupied in America the combined French and Spanish fleets sailed into the British Channel where they encountered no resistance. Before, however, the boats could land on England's shore an epidemic of smallpox attacked the sailors. Half of the personnel was affected. A storm arose which blew the nearly helpless fleet 100 miles out into the Atlantic ocean. Never was England nearer invasion even from the Spanish Armada, Napoleon or following Dunkirk. Who knows how

much English history might have been altered had it not been for this epidemic of smallpox.

Smallpox had been a most serious scourge of humanity before vaccination was discovered. Aside from epidemics it was endemic year after year and took a frightful toll in life and disfigurement. That it played a lesser roll in military campaigns was due to the fact that it attacked minors and most adults had had the disease before they reached army age.

Bubonic plague commonly known as the Plague or the Black Death has probably exacted a greater toll of human lives than any other pestilence.

Guy de Chauliac, an Italian physician and surgeon, has given us a good description of the pneumonic and bubonic types of the plague as it appeared in Italy in 1348. It was brought by rat-infested boats from the Near East to Sicily and thence to Italy. He himself contracted the disease but recovered and later wrote his Great Surgery which was to become authoritative for three centuries.

The introduction to Boccaccio's Decameron gives a vivid description of the plague in Florence. The book, as you doubtless know, is a collection of very sexy stories supposed to have been told by seven pretty young girls and three youths to while away their time on a house party at a castle outside of Florence, Italy, whither they had fled from Florence to escape the plague. The lowering of morals which accompanied and resulted from the plague is also well described in the introduction to this volume.

Millions died of the plague in India and China during the fourteenth century. It spread from Italy into Germany, Russia, Holland, France and to England. In the province of Venice more than 100,000 died; likewise in London; some 60,000 in Florence and 500 daily for a time in Paris. It was responsible for a lowering of moral tone throughout Europe, social and economic changes and eventually was followed by the Reformation.

The plague was present yearly in London from 1603 to 1665. The latter date was that of the Great Plague of London. Not knowing the relation of the rat and the rat flea to the spread of the disease the Mayor of London decreed that all dogs and cats as well as rats should be killed. Some 40,000 dogs and 200,000 cats, the natural enemies of the rat, were sacrificed. The Great Fire of London in 1665 put an end to the plague. Samuel Pepys in his famous diary recorded June 10, 1665 as the day the Great Plague began in London.

In 1630 over 500,000 died of the plague in the Venetian Republic. Competent authorities attribute the downfall of the Republic to the plague.

In 1636 the plague reached the Tyrol. The famous Passion Play of Oberammergau given each ten years since, is the fulfillment of a vow made by the citizens of that small community when they were spared further ravages.

One of Napoleon's early campaigns was that into Africa. He conquered Egypt but his return to France was cut off by Nelson's defeat of the French navy at Aboukir. Forced to press on to Syria he failed to capture St. John of Acre located near Jerusalem. The city was enabled to hold out when the British Admiral Smith supplied the city with food. Bubonic plague broke out among the French forces. Napoleon is said to have visited the hospitals, encouraged his men and actually picked up one of his soldiers sick of the plague and carried him back to his room to show his contempt for the disease. His physician, Dr. Desgennettes, to strengthen the morale of the troops, is said to have pricked a bubo and scratched his arm with the same needle. His failure to contract the disease is supposed to have demonstrated the effectiveness of his remedies. Not knowing the mode of transmission of the disease this procedure must have required considerable courage.

Typhus has exacted a terrible toll in Europe during the past four centuries. It was first described by the Italian physician Cardan who was born in 1501 and practiced in Milan.

In 1528 Charles V, King of Spain, sent an army into Italy under Philibert, Prince of Orange. This force conquered northern Italy and occupied Naples. It was decimated by disease. Francis I of France sent an army of 25,000 to rescue Naples but the attempt failed when spotted fever broke out among the troops and reduced their number to 4,000. As a result Naples remained a Spanish possession for two centuries.

In 1544 an army under Joachim of Brandenburg besieged Budapest then held by the Turks. He lost 30,000 soldiers from spotted fever and was forced to retreat. Budapest as a result re-

mained in the hands of the Turks for nearly 150 years more.

During the Thirty Years' war in the 17th century, Wallenstein's army carried the Hungarian Disease (typhus) into northern Germany. By the end of the war three quarters of the population of Germany had died. When the disease invaded Holland, Leyden lost 10,000 and Amsterdam 12,000. During this period England was spared and medicine and science flourished.

Napoleon's failure to conquer Russia was largely contributed to by typhus and typhoid. He set out for Russia with a force of 363,000 men, one third French and the rest Germans, Austrians. Poles and Italians. Inside of three months 80,000 were sick of typhus, typhoid and dysentery.

In his memoirs the French sergeant, Bourgoyne, tells of the prevalence of body lice amongst the troops. Some 80,000 of Napoleon's troops left the burned city of Moscow, only 20,000 of which reached France. Typhus and related diseases contributed largely to the catastrophy of Napoleon's invasion of Russia.

During the Crimean War which began in 1854, the English troops suffered terribly from typhus fever. Nursing of sick soldiers up to that time had been left to privates, with no training in sanitation, detailed to care for their sick fellows. Reading of the deplorable condition and the high death rate in the English military hospital at Scutari, across the Bosphorus from Constantinople, the English nurse, Florence Nightingale, at the head of a corps of nurses had the moral and physical courage to offer her services. The death rate in the hospital at Scutari was 427 per 1,000 in February but after her arrival was reduced to 107 in April and only twenty-two in June. She described the infestation of the hospital with vermin and proved the importance of sanitation. The English and their allies lost 50,000 men in the Crimean war from disease and 2,000 from bullets.

It was typhus that played such havoc in Serbia in 1914. It first appeared in the Serbian army in November, 1914. Inside of six months one fourth of the Serbian army had died. Before the war was over 300,000 Serbs, one-tenth of the Serbian population had perished. Hans Zinsser stated that typhus may not have won the world war but it certainly helped.

Typhoid fever enacted a greater toll in the American army during the Spanish-American War than did bullets. During the war there were some 14,000 cases of typhoid in the camps. Twenty per cent of the American troops in Cuba were sick from typhoid, dysentery, malaria and yellow fever. Statistics showed that twenty-nine officers and 440 privates were killed in action while sixty-seven officers and 1,872 men died of disease.

Typhoid enacted an even greater toll in the Boer War. By the end of the war the British had had 57,684 cases of typhoid with 8,022 deaths. During the war 14,000 died of preventable disease and 8,000 from battle. Vaccination against typhoid was first used in a small way in this war. Vaccination against typhoid was first made compulsory in our army in 1911. By 1913 there was no mortality among our troops from typhoid. During the world war there were only 213 deaths from typhoid in our force of 4,000,000 men, thanks to universal vaccination.

Malaria has played an important part in the history of the world in that it has been endemic over a wide territory. It was introduced into Italy from Africa in the third century B.C. Rome built on the seven hills and well drained by the famous sewer known as the Cloaca Magna was spared from malaria for a time but the influx of the rabble into the city from the surrounding country carried the disease to the city and contributed to the fall of Rome.

During the conquest of Peru by Pizarro the Spanish soldiers suffered terribly from malaria. The story is told that while on a march one soldier sick of malaria was left behind to die. Parched with thirst he had just enough strength to pull himself to a pool containing bitter tasting water and drank of it. He recovered from the disease and joined his company. His miraculous cure led to the discovery that a log of Peruvian bark accounted for the bitter taste and curative quality of the water in the pool. The Jesuits brought the bark to Europe and Peruvian bark or powder became the cure for malaria. Peru had a monoply on quinine until the Dutch cultivated the trees in Java. Fortunately the synthesization of atabrine provides a treatment for malaria just as potent as quinine.

The origin of syphilis is obscure. Some have stated it was contracted from the American Indans but this is open to question. It first made its appearance in Europe in 1494 following the return of a military force from Naples. It was

the ambition of Charles VIII of France to conquer Italy, proceed to Turkey, wrest Constantinople from the Turks and establish himself as Emperor of the East. To this end he gathered a mercenary army consisting of French, Germans, Swiss, Hungarians, Poles, Portugese and Spaniards and marched into Italy. Meeting with little resistance he soon occupied Naples. His soldiers gave themselves over to an orgy of dissipation until a coalition formed against him and he retired from Italy. The returning soldiers spread the disease syphilis, then known as the French disease, all over Europe. It seems probable that the Spanish soldiers of the invading force may well have spread the disease in Naples and thence all over Europe. The venereal nature of the disease and the value of mercury in its treatment were recognized early by the Italian physician Di Vigo. Di Vigo's mercury plasters still appear in the U. S. Pharmacopœia.

The story of yellow fever is pretty well known. It was endemic in Central America as far back as we know. The Mayas of Yucatan are known to have attained a high degree of culture between the years of 200 and 600 A.D. They built beautiful palaces, temples and cities. In 1454 they suffered an epidemic of yellow fever which nearly exterminated the race. Almost yearly epidemics were experienced between the years 1545 and 1576 after which the race scattered. The Mayas lived on low ground whereas the Aztecs lived on higher ground. Yellow fever was doubtless the cause of the race's extinction.

Yellow fever played an important part in the history of Hayti. Discovered by Columbus, Hayti later became a French colony. Negros were imported in large numbers and eventually outnumbered the other races. A rebellion in 1800 under the leadership of a negro named Toussaint L' Overture led to Napoleon's sending a force of 30,000 men to Hayti to quell it. When the force landed at Cape Haytien the negroes burned the town and retired to the hills. Only 7,000 of the original force of 30,000 survived yellow fever and returned to France.

It may not be remembered that a Cuban physician by the name of Carlos Finlay in an article published in the *American Journal of Medical Sciences* in 1889 was the first to contend that yellow fever was spread by the *Cutex fasciatus* mosquito later called the *Stegomyia fasciata.*

It was the United States army commission headed by Walter Reed, James Carroll, Lazear and others that definitely proved the role of the mosquito in the spread of the disease. It was William Gorgas who by practical application of this knowledge freed Havana of yellow fever in a short time and made the construction of the Panama Canal possible. Had it not been for yellow fever the French would have built and owned the Panama Canal, the consequences of which can only be conjectured. Had it not been for the conquest of yellow fever in Panama by Gorgas the canal would not have been built.

The havoc wrought during World War I by the epidemic of influenza is general knowledge. It accounted for 24,000 deaths among the United States troops alone and many more thousands in our civilian population. Our loss from conflict was some 35,000. The grand total of deaths from this pestilence throughout the warring world was incalculable.

What can we anticipate regarding the role of disease in the present global war? We know much about the causative agents of many diseases likely to be encountered, their mode of spread and how to prevent their spread. We also have specific remedies for certain diseases. Nevertheless our troops will encounter and have already encountered conditions in which prevention and treatment of disease will be impossible.

In campaigns such as on the Bataan peninsula and in Guadalcanal it has been difficult to safeguard food and water supply and impossible to combat the mosquito. Our forces are being sent to all parts of the globe. Universal vaccination is being practiced against typhoid fever, smallpox and tetanus. Troops being sent to the tropics are receiving additional vaccination against yellow fever, typhus and cholera. Some troops will be sent to regions where they will encounter malaria, amebic and bacillary dysentery, plague, kala-azar, dengue fever, sandfly fever and the helminthic infections against which no preventive vaccination has been developed and general sanitary measures constitute the only defense.

Malaria probably constitutes the most serious problem. In combat areas the usual methods of exterminating the mosquito and complete screening of well soldiers and those sick from malaria are impractical. Fortunately the army was well stocked in advance with quinine and the routine administration of quinine and the equally efficacious synthetic atabrine will hold malaria symp-

toms in abeyance but will not prevent infection. Without doubt many soldiers will return from the tropics infected with malaria. We have the anopheles mosquito, the vector of the disease, in many parts of the country including Minnesota. It seems likely we may see more malaria in Minnesota following the war.

We can expect a goodly number of soldiers returning from the far East with amebic dysentery just as after the last world war.

Bubonic plagues should not prove a serious problem. We know it is spread by the rat flea and rigid measures directed against the landing of infected rats at our ports should prevent spread in our country. There is a focus of plague in California among the rodents which constitutes a constant threat to citizens in that state.

Fortunately dengue and sandfly fever, although major causes of disease in some areas, are seldom fatal.

Yellow fever is endemic in South America. The Aedes Aegypti mosquito which is the vector of the disease is present in the southern states and a few cases could conceivably start an epidemic. The prevention of the importation of mosquitoes infected with the disease on airplanes arriving from South American countries is important. Vaccination is said to be effective. The appearance of jaundice in soldiers a few weeks to six months following vaccination with certain batches of yellow fever vaccine caused considerable publicity. Some of those vaccinated were acutely sick. Although the cause of the jaundice has not been satisfactorily explained the elimination of human serum in the preparation of the vaccine seems to have solved the problem.

Typhus fever can be prevented largely by controlling infestation with the body louse. The disease has been present on the Russian front and in Northern Africa where in 1942 severe epidemics occurred from Morocco to Egypt. The effectiveness of immunizing methods has yet to be confirmed.

We have had small epidemics of typhus fever in this country. A number of cases in New York City a number of years ago of so-called Brill's disease proved to be typhus fever.

As recent as 1939, 100 cases of typhus constituted a small epidemic in Nashville, Tennessee. This outbreak was not associated with the body louse but was transmitted by the rat flea which is the vector in endemic cases. Extermination of the rat in localities of the city where the disease appeared terminated the epidemic. From a practical standpoint only those working in places like a warehouse apt to be infested with rats are likely to require vaccination against typhus.

Of the various methods of preparing vaccine this much can be said. Weigl's method of injecting the virus into the rectum of a louse and using the dissected intestines in preparing the vaccine is too cumbersome inasmuch as 100 lice are required for one vaccination. Cox's method of injecting the yolk sac of the embryo chick is commercially practical and is now on trial in Rumania, Hungary, Spain and China.

Interesting in connection with the subject of typhus is the story of the visit to Mexico in 1910 of Dr. Howard T. Ricketts of Chicago and a medical student by the name of Russell Wilder to study typhus. Ricketts described small organisms in the blood of patients sick with typhus and in lice. Dr. Ricketts died of the disease. The group of organisms which are the cause of typhus and Rocky Mountain Spotted Fever were named richettsia in his memory.

Cholera is an infection by a vibrio and resembles typhoid in its mode of infection. Troops stationed or traveling through Asia have been immunized beginning in 1942.

Will another influenza epidemic complicate the present world war? While we know the disease is due to a virus and types A and B have been described no effective vaccination for general application has so far been worked out.

Few are the items that can be listed on the credit side of war. A few surgical procedures such as improvement of technique in amputation of limbs, debridement, the Carrel Dakin irrigation of wounds, the Orr treatment of osteomyelitis resulted from war experience. Most of the advances in the discovery of the cause of disease, its prevention and treatment have been made during peacetime.

As outgrowths of war may be mentioned the development of the military hospital which can be traced back to the time of the Crusades when a monk, Brother Gerard, founded the hospital of St. John in Jerusalem open to Mohammedan, Jew and Christian alike. The development of the profession of trained nurse dates back to Florence Nightingale and the Crimean War. It was a Swiss Henry Dunant who as a spectator at the bloody battle of Solferino in Italy in 1859, conceived the idea of the Red Cross, the first Con-

gress of which met in Geneva in 1863. Clara Barton, an American woman, was in Berne, Switzerland, in 1870 at the outbreak of the Franco Prussian War. She joined the German Red Cross and after the war on her return to this country succeeded after nine years of perseverance in inducing Congress to join the International Red Cross as the thirty-second nation to join.

On the debit side of war is the slaughter of the best physical specimens of manhood of the countries involved and the resultant physical and mental wrecks resulting from war wounds and disease. Disease and starvation, in civilian population, to say nothing of the destruction of property only add to the sum total of war devastation.

References

1. Bell, Joseph A.: Epidemiology in wartime. J. M. Soc. New Jersey, 39:419, (Aug.) 1942.
2. Dyer, R. E.: Mass immunization against typhus fever. Ann. Int. Med., 15:629, (Oct.) 1941.
3. Major, Ralph H.: Disease and Destiny. New York: Appleton-Century Co., 1936.
4. Major, Ralph H.: Fatal Partners. New York: Doubleday, Doran and Company, 1941.
5. Rice, John L., and Frant, Samuel: Perils of pestilence. Survey Graphic, 31:124, (March) 1942.
6. Roemer, Milton I.: History of the effects of war on medicine. Ann. M. History (3rd series), 4:189, 1942.
7. Thursfield, Hugh: Smallpox in American War of Independence. Ann. M. History (3rd series), 2:312, 1940.

CASE REPORT

FAILURE OF SURGICAL WOUND HEALING DUE TO TALC

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A private in the United States Coast Guard, aged twenty, was admitted to the hospital because of pain in the right lower quadrant. The following day an acutely inflamed appendix was removed through a McBurney incision under spinal anesthesia. The abdominal wall was closed in layers without drainage using chromic 0 for ties and chromic I for the peritoneum, fascia and muscle. No sulfonamid drugs were used in the peritoneum or wound. A low grade fever reaching 103.4° and returning to normal on the sixth postoperative day was thought to be due to bronchopneumonia. Sulfadiazine was given to a blood level of 4.26 mg. per cent. The white blood cell count never rose above 8,900. The pulse reached 100 and respirations were from 20 to 30 per minute. The patient was discharged on the eleventh postoperative day, apparently cured.

Seven weeks after the appendectomy there had developed a bleb-like swelling in the operative wound with apparent separation of its deeper margins. Clear, yellow, jello-like material was released from the pocket immediately beneath the epidermis at this time and adhesive tape and dressing were applied. From that time on the wound remained at least partly open and had a sero-purulent drainage. One week later or two months after the appendectomy a sinus tract was found leading down to the peritoneum. There was some resection of the wound margins and they were resutured. Three months after the appendectomy there was a chronic draining sinus at the lower end of the scar from which staphylococcus aureus was cultured. There was again obvious separation of the wound margins although the scar was covered for the most part by a thin bluish layer of epidermis. The wound was again completely opened. Its margins were resected and again sutured together. On this occasion the same clear, yellowish, jello-like fluid was found in a large part of the old scar area. This space was apparently connected with a narrow sinus tract leading out to the lower margin of the scar. The patient's general condition was good. Laboratory studies including blood plasma protein determination, Klein test, blood cell counts and urinary findings were entirely normal.

The biopsy material from the resected margins of the appendectomy wound revealed an extensive chronic granulomatous inflammatory process with numerous foreign body giant cells, the majority of which contained easily visible double refractile crystals of the magnesium silicate or talc type.

Discussion

There is a surprisingly delayed but rapidly growing literature on the subject of glove powder in surgical fields. Practically every part of the body has now been described by Antopol,[1] Erb,[5] Feinberg,[6] Antopol and Robbins,[2] Ramsey,[11] Ramsey and Douglas,[12] Byron and Welch,[3] Owen,[10] and German,[8] as having been involved in tissue reaction due to dusting powders including the brain, spine, kidney, testis, hemorrhoids, neck, breast, maxillary sinus, cervix and the abdominal wall and its organs. Complications were discovered up to seventeen years after the original operation.

There are two principal dusting powders, hydrous magnesium silicate or talc, U.S.P. which is almost universally used in this country, and lycopodium powder which consists of spores from a species of club-moss. When in contact with barren tissues, both powders will excite a chronic granulomatous process somewhat similar to the reaction caused by the tubercle bacillus. The

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From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota. Reported before the Northern Minnesota Medical Society annual meeting, August 28, 1943, Duluth, Minnesota.

AN ANALYSIS OF DEATHS DUE TO TOXEMIA OF PREGNANCY

Minnesota Maternal Mortality Committee

A committee, appointed for the purpose by the Minnesota State Medical Association, has reviewed the case records of all women who died between July 1, 1941 and June 30, 1942 in Minnesota and whose deaths could be assigned to pregnancy or to any complication of pregnancy. Herein is presented a study of the case records of those patients whose deaths were charged to toxemia of pregnancy.

In addition to determining the cause of death, the committee has attempted to determine the contributory factors as they are related to (1) prenatal care, (2) conduct of labor and delivery and (3) postpartum care.

At the outset, the committee adopted certain minimal requirements for adequate obstetric care which could and should be carried out by any physician licensed to practice medicine in Minnesota. Except for details relating to birth certificates and to maternal and infant deaths, these requirements are appended as follows:

First prenatal visit.

1. Adequate history and general physical examination, with accurate follow-up of any abnormality revealed by these.
2. Pelvimetry, to include anteroposterior diameter of the inlet (internal) and intertuberous diameter.
3. Complement fixation reaction of the blood for syphilis.

Routine prenatal visits.

1. Determination of blood pressure.
2. Urinalysis, especially for albumin.
3. Determination of weight.
4. Abdominal palpation during last two months of gestation.
5. Reasonably adequate study of abnormalities presenting themselves during these visits.

Labor and Delivery

1. Adequate use of generally recognized obstetric procedures.
2. Observance of adequate asepsis.

Postpartum Care

1. Reasonable promptness in recognition of abnormalities.
2. Reasonable promptness in institution of adequate treatment.

This report deals with the cases of fifteen women who died from causes attributed by the committee to the toxemias of pregnancy. These deaths constitute 13.3 per cent of the total maternal deaths for the designated year. Statements contained in the report of the investigation of maternal deaths are based on facts recorded in the case reports obtained by special investigators. Critical analysis of the management by the physician in such cases reveal many instances in which the minimal requirements for maternal care were not met. It should be stated that these cases represent comparatively few deaths among the many maternity cases in Minnesota.

The Committee on Maternal Mortality in Minnesota was appointed for the purpose of investigating causes of maternal mortality in the state. The committee is not concerned officially with the legal aspects of inadequate medical care of the parturient woman but rather is interested in improving this care as a means of lowering the incidence of maternal and fetal morbidity and mortality. With this in mind, in the report on maternal deaths attributable to the toxemias of pregnancy, the principles of management of these toxemias will be reviewed briefly in order to designate more pointedly various aspects of the inadequate and often erroneous care received by these patients.

"Toxemias of pregnancy" is a term which has been accepted widely as applying to any condition, occurring in the course of pregnancy which is featured by hypertension and, usually, by edema and albuminuria. Formerly, nausea and vomiting of early pregnancy and the rarely occurring acute yellow atrophy of the liver, were called toxemias of pregnancy. When signs of hypertensive toxemia appear early in a pregnancy it is almost certain that chronic arterial or renal disease, or both, were present prior to that pregnancy. When these symptoms first appear late in a pregnancy (third trimester) it is equally certain that the acute hypertensive toxemia developed in the course of that pregnancy.

So many articles have appeared relating to the toxemias of pregnancy that it should be common knowledge among physicians who care for pregnant women that 5 to 10 per cent or more of these women exhibit evidence of toxemia, that toxemias predispose to many premature births, fetal deaths and infant deaths, and that frequently they are the cause of subsequent chronic arterial or renal disease. Also, it is common medical knowledge that hypertensive or renal disease complicating pregnancy may lead to eclampsia and sometimes death.

To an appreciable extent, maternal and infant mortality due directly or indirectly to severe nonconvulsive and convulsive toxemias are preventable. Prevention is effected by following the simple principles of routine prenatal care and by early recognition and adequate treatment of these complications. Usually the toxemia can be discovered and treated before the appearance of alarming symptoms.

Prenatal Care

Adequate prenatal care is a vital part of the practice of obstetrics. An adequate prenatal examination begins with the first visit of the pregnant woman to the physician. In fact, under the most ideal conditions, a prospective mother is examined thoroughly prior to pregnancy. At the first examination a history is obtained and recorded of previous illnesses or operations, of the course,

outcome and complications of previous pregnancies and of the course of the present pregnancy to date. Complete physical examination is desirable but it should include at least a record of the patient's weight and blood pressure and investigation of the heart, lungs and pelvis, including external and internal pelvic mensuration. The blood is examined to determine the concentration of hemoglobin and it is subjected to complement fixation reaction for syphilis. The urine is examined to determine its specific gravity and whether or not albumin, sugar and red and white cells are present. At this time the patient is advised about diet, with special attention to limitation of intake of salt and to avoidance of excessive gain in weight by restricting the intake of carbohydrates and fats. She is told to include in the diet an ample amount of protein. She is directed to return for examinations at regular intervals, at least every month until the seventh month of pregnancy is reached, and every two weeks or oftener thereafter. An accurate follow-up investigation of any abnormality is essential.

Among these fifteen cases it is hardly surprising to find that three had no prenatal care or practically none; in seven, the care was faulty and in at least two, it was grossly faulty. Enumeration of the errors, more than one of which applied in some cases, included incomplete history or inadequate records, seven; not recorded physical examination, four; no record of pelvic mensuration, six; no complement fixation reaction, five; no urinalysis, two. In other instances the patient was not weighed or the follow-up examination was incomplete. In several instances the patient was not given dietary advice, such as, to lessen the intake of salt in order to help avoid retention of fluids which produce edema, or she was not warned of the danger of continuing pregnancy in the presence of severe toxemia. On several occasions the responsibility for the death was attributed to neglect on the part of the patient to consult a physician or to follow his advice until after the development of grave symptoms of toxemia.

In addition to the first examination the chief value of prenatal care rests on repeated periodic examinations which usually enable the physician to detect a complication early and to institute treatment before the complication has become severe. The scope of this communication permits only brief mention of the detection and management of preëclamptic toxemia. Those who are alert to the seriousness of this disease know that its chief finding is hypertension, usually accompanied by albuminuria and often by edema. A rise in blood pressure, which is commonly the first evidence of toxemia of pregnancy, can be detected in the course of prenatal examination. Hypertension occurs in the presence of widespread spasm or injury of the arterioles. Although the cause of this injury has not been shown conclusively, it has become evident that measures to relax arterial spasm remain the most effective treatment of preeclampsia. When hypertension is discovered, therefore, rest and sedation are of primary importance. If the hypertension is accompanied by edema, the intake of sodium chloride in the diet should be greatly reduced and diuretics, such as ammonium or potassium nitrate, are employed to promote excretion of water and salt. Saline laxatives may be employed as indicated. Unless the hypertension is promptly lowered or in case the blood pressure is more than an arbitrary figure of 160 systolic, the patient should be hospitalized. When such measures are followed, the occurrence of eclampsia is rare.

Delay in recognition of the toxemia, or failure to institute treatment early, occurred in six cases, in four of which failure to hospitalize the patient also was a feature. Among the patients hospitalized, nine did not receive, even in the hospital, adequate examination and care. In certain cases the patients suffered from faulty treatment of the toxemia, failure to take steps to terminate pregnancy when indicated, inadequate use of sedatives and one toxemic patient was inadvisably discharged from the hospital. One patient with cardiac complications was not followed up.

Labor and Delivery

If the toxemia is severe and progressive, termination of pregnancy is indicated at any period of gestation. These patients react unfavorably to trauma and methods of induction of labor and of delivery should be selected accordingly. Induction of labor by medication is desirable but the use of pituitrin is dangerous because of its effect in raising the blood pressure. Rupture of the membranes, under asceptic technique, is the simplest and safest method of mechanical induction at or near term. Certain conditions, such as disproportion between the fetus and the pelvis, or the presence of a long, thick, uneffaced uterine cervix as, for example, in an older primigravida, may be an indication for cesarean section.

The employment of sedation in these cases is extremely important before, during and after labor, because it tends to prevent the occurrence of convulsions. Those patients who had hypertension before becoming pregnant and among whom severe toxemia develops, are prone to have sharply lowered blood pressure postpartum which may proceed to acute vascular collapse. In such cases the blood pressure should be watched for several hours after delivery, particularly after operative delivery.

Eclampsia with convulsions should not be treated radically. Sedation by the hypodermic use of ¼ to ½ grain (0.016 to 0.032 gm.) of morphine, repeated if necessary until the respiratory rate is lowered to between 10 and 14 per minute, has been helpful. Judicious administration of 20 c.c. of a 10 per cent solution of magnesium sulfate intravenously every hour until the convulsions are controlled has proved effective. In addition to the use of sedatives, in many instances improvement has been obtained and diuresis has followed the intravenous administration of 250 c.c. of 20 per cent solution of glucose, followed by less concentrated solutions after diuresis has been established.

If the patient is not in labor it is safer to defer mechanical methods of induction of labor until after cessation of convulsions. Rapid, forcible dilatation of the cervix and forcible delivery should not be done. Immediate cesarean section during the convulsive state is followed by a high rate of mortality. Too much

emphasis cannot be placed on the importance of treating the disease first and terminating the pregnancy later.

It is common knowledge among physicians practicing obstetrics that the risk, to the toxemic patient, of labor and delivery is greatly increased. In this connection, the management was grossly faulty in at least three cases, in one of which, clearly, there was too great diffusion of responsibility. Among the errors were intramuscular injection of pituitrin for induction of labor in three cases of preëclampsia and during labor in five such cases. The rise in blood pressure following the injection of pituitrin precipitated convulsions in three instances. Selection of the method of induction in one case and the method of delivery in four cases, including two in which delivery was by cesarean section, was most questionable.

Poor choice of anesthesia was recorded in three cases. Inadequate sedation of a patient with a cardiac lesion in labor, failure to spare such a patient the strain of second-stage delivery, ill-advised manual removal of the placenta, and inadequate asceptic preparation for, and technique of, delivery were noted in one each of four cases.

Postpartum Care

That the care of the parturient woman does not end with the birth of the baby applies in even greater degree to the toxemic patient than to the "normal" parturient. Among these patients was found evidence of definitely faulty postpartum care, such as lack of postpartum sedation, unwarranted administration of pituitrin to the severely preëclamptic patient, the administration of intravenous saline solution to an eclamptic patient, the use of excessive intravenous therapy in one case, and, in another, the employment of inadequate intravenous therapy. The record of one patient who died of vascular collapse following delivery illustrates the necessity of repeated estimations of blood pressure following delivery if a patient is suffering from severe, chronic hypertension and how important it is for every hospital to have available blood, plasma or other solutions for the immediate intravenous treatment of shock.

Deaths

Among the fifteen patients referred to in an earlier paragraph were nine who gave evidence of chronic cardiovascular disease and six whose hypertensive toxemia had its onset in the course of pregnancy. Six patients died of eclampsia, three antepartum and three postpartum. In three cases, the eclampsia afflicted patients who had chronic cardiovascular disease and in three the eclampsia was the culmination of acute preeclampsia. Two deaths were attributed to cardiac failure complicating toxemia. One death occurred as a result of vascular collapse following cesarean section and one resulted from obstruction of the small bowel following cesarean section for preëclampsia. One death was caused by cerebral hemorrhage and one by hemorrhage into the adrenal glands. One patient with preeclampsia died in labor of hypoglycemic shock, one of terminal uremia and one died nine days postpartum of neglected epistaxis associated with chronic cardiovascular disease.

With the records of each case before it, the committee attempted to decide in which cases death might have been prevented, and who might have been responsible for not preventing the death. It was felt that death could not have been prevented in two cases, that death was probably preventable by the physician in five cases, but evidence indicated that death could have been prevented by the physician in five cases, that the responsibility rested on the patient in two cases and that the physician and patient shared in the responsibility in one case.

Comment

Vital statistics for the State of Minnesota show that for many years the maternal mortality rate in this state has been among the lowest, and sometimes the lowest, in the United States, indicating that the general average of maternal care in this state is adequate. Usually toxemias of pregnancy are found to be the cause of approximately 20 per cent of maternal deaths. Among the cases for the year under review, only 13.3 per cent of the deaths were attributable to toxemia. This would appear to indicate that the physicians of Minnesota have amplified their understanding of the toxemias of pregnancy and their ability to cope with this complication. However, review of the case records of the fifteen patients whose deaths were assigned to toxemia, indicates that there were some physicians practicing obstetrics in Minnesota who either had not familiarized themselves with the minimal requirements of adequate prenatal and obstetrical care or who used faulty judgment in applying their knowledge.

On the basis of this survey of the data obtained from the cases in which the patients died of toxemia it is recommended that:

1. All physicians who assume the responsibility for maternity cases should be familiar with the essential principles of prenatal and maternal care.

2. All such physicians should keep as a minimum an adequate record of the prenatal, labor and postpartum findings and care of each patient, including a history of previous pregnancies and their outcome.

3. At the time of her first visit to the physician, each pregnant woman should have sufficient physical examination to enable the physician to be familiar with her general state of health, specifically including urinalysis, blood pressure, weight, complement fixation test for syphilis, and pelvic measurements.

4. Repeated prenatal examinations should be made at monthly intervals up to the seventh month of gestation and, after that, at intervals of two weeks or more often; the weight, blood pressure and results of urinalysis should be recorded at each visit.

5. Physicians should be familiar with the signs and symptoms of the toxemias of pregnancy and with the recognized and accepted principles of management of this disease before, during and after parturition.

CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

J. B. Arey, M.D. Pathologist

Presentation of a Case

J. B. Arey, M.D., and W. E. Peterson, M.D.

DR. AREY: The case is that of a seventy-nine-year-old white man who was admitted to the Minneapolis General Hospital on May 19, 1944, where he died June 15, 1944. On admission he stated that he was apparently well until three to four days prior to admission, at which time he noted severe pain in the left foot, associated with redness and swelling.

Past history revealed that the patient had suffered from a similar episode about ten years ago. During these past ten years he had noted the appearance of multiple firm, nodular, painless masses on the back of his hands and fingers and over the elbows and knees. During this ten-year period he suffered from intermittent attacks of pain and swelling in both great toes. The family history was noncontributory.

Physical examination on admission showed a temperature of 100.4, pulse 92, respirations 22, blood pressure 150/80. He appeared to be in quite good condition, and complained only of his feet. Pertinent physical findings included questionable left ventricular cardiac enlargement and a loud systolic murmur at the apex of the heart. The base of the left great toe was markedly swollen, and there was a lesser degree of swelling of the entire left foot and lower leg. This swelling was associated with mild redness and increased temperature of this area. Upon motion, active or passive, the great toe was very painful. There was a slight bluish discoloration of the toes of the right foot, and at the base of the right great toe were multiple scars said to represent healed spontaneous fistulous tracts.

There were multiple firm, nodular, painless, yellowish masses varying up to 4 cm. in diameter over the dorsum of the hands and fingers and over the elbows and knees. These masses appeared to be attached to the bones and joints, but there was no limitation of motion except for the left fourth finger and the left great toe. There was a large nodule on the medial aspect of the left metatarso-phalangeal joint, and a smaller mass in a similar position on the right.

Laboratory examination on admission showed a negative serology, hemoglobin 90 per cent, white blood count 12,500 with 87 per cent polymorphonuclear leukocytes. The urinalysis on two occasions showed a specific gravity of 1.016, trace to one plus albumin and occasional red and white cells. The blood uric acid on admission was 6.2 mg. per cent, blood urea nitrogen 35 mg. per cent, cholesterol 150 mg. per cent. On June 2, 1944, the uric acid had risen to 7.0 mg. per cent, blood urea nitrogen to 43 mg. per cent and the creatinine was now 3.6 mg. per cent.

The patient became somewhat listless and drowsy shortly after admission and continued in this manner until his death. Shortly after admission a draining sinus developed at the base of the left great toe. Abundant greyish, putty-like material drained from the sinus, and chemical analysis showed this to contain both urates and cholesterol. The sinus continued to drain and appeared secondarily infected, and on several occasions hemolytic streptococci were cultured from the drainage material, so that surgical drainage was instituted.

Continuous hot packs were maintained on the left foot, and the patient received a short course of colchicine therapy with some relief of symptoms. On May 21, 1944, a nodule was removed from the left wrist, and histologic examination confirmed the clinical diagnosis of gout.

The patient's temperature ranged between 99° and 101° until June 1, 1944, when it rose to 102° and continued at this level until the day of death, when it fell to 97°. In spite of his somewhat drowsy, listless condition, his condition was not considered critical, but he died suddenly on June 15, 1944, approximately one month after admission.

DR. STENSTROM: X-ray examination of the hands and feet shows marked punched out areas of destruction involving the phalanges. There is marked soft tissue swelling about the involved joints. The picture is that of an extreme degree of gouty arthritis.

DR. PHARES: Postmortem examination revealed the aforementioned nodules distributed over the hands, feet, elbows and knees. There was a gangrenous area involving the left heel, and an open, draining wound on the dorsum of the left foot. Large tophi were present over both first metatarso-phalangeal joints, and the skin over these showed considerable desquamation. A draining sinus at the base of the left great toe communicated with the metatarso-phalangeal joint, and upon opening the joint cavity a mass of putty-like material about 7 cm. in diameter was removed. The cartilage of the joint was almost completely destroyed, and there was considerable destruction of the adjacent ends of the bones.

The heart weighed 400 grams. There was moderate hypertrophy of the left ventricle, but no definite dilation of any of the chambers. The coronary orifices were patent. At a point .5 cm. from the right coronary orifice the lumen of the vessel was completely occluded by atherosclerosis for a distance of several millimeters. Portions of the circumflex branch of the left

coronary artery showed up to 60 per cent narrowing by atherosclerosis, and one point in the anterior descending branch of the left coronary artery was approximately 20 per cent narrowed. No thrombi could be located in any of the coronary vessels. On section the myocardium showed multiple patchy areas of fibrosis.

The lungs together weighed 980 grams. There was moderate congestion of both lower lobes, and several small areas of bronchopneumonic consolidation were present in the left lower lobe.

The liver weighed 1,720 grams, and on section showed no appreciable change from the normal.

The right kidney weighed 115 grams, the left 120 grams. The surfaces were finely and coarsely pitted, and there were several smooth-walled cysts up to 1.5 to 2 cm. in diameter on the surface of each kidney. On section the cortices were definitely narrowed, but there was no dilation of either pelvis or ureter. Scattered through the medullary portions of each kidney were a very few yellowish, linear crystalline deposits.

Microscopic

DR. AREY: Sections of the kidney show severe arterial and arteriolar disease in addition to the deposits of sodium urate crystals in the medullary pyramids. Although in rare instances such tophi in the kidneys may be sufficient to cause renal insufficiency, in this case the deposits are very small and could hardly have contributed to the elevated B. U. N. Large areas of renal parenchyma are atrophic as a result of the severe arterial changes, and the microscopic picture is that of a primary chronic hypertension with moderate renal insufficiency. In sections fixed in absolute alcohol and stained with the Galantha stain we were able to demonstrate a few small deposits of sodium urate in the renal pyramids, and about these was a chronic foreign body reaction.

Section of one of the tophi shows a mass of crystalline material surrounded by a fibrous capsule. Within the inner border of the latter are many giant cells, a response to the presence of a foreign body. Again these sections, when fixed in absolute alcohol and stained by special methods, showed the crystals to be sodium urate.

Sections of the heart show multiple patchy areas of fibrosis, secondary to disease of the coronary arteries.

In summary, this patient presented the classical signs and symptoms of gout, that is, podagra, multiple tophi over the extremities, an elevated level of the blood uric acid, and punched out areas of erosion in the joints demonstrable by x-ray. In addition, there were a few small tophi in the renal pyramids. The uremia, however, was due to the arterial and arteriolar disease in the kidneys associated with hypertension. The immediate cause of death was coronary occlusion on the basis of atherosclerosis.

DR. PETERSON: This is a brief summary of some of the clinical pictures of gout. Gout is a disease of unknown etiology characterized by (1) acute recurrent attacks of arthritis followed by complete remissions in the early stages of the disease, and later progressing to a chronic arthritis; (2) supposed abnormality in the renal excretion of uric acid; (3) hyperuricemia which is at first transient but later persistent; (4) eventually deposits of urate crystals in the articular, peri-articular and subcutaneous tissues, sometimes in the kidneys and urinary tract; (5) frequent terminal vascular lesions in the kidneys, occasionally in the heart and brain.

The multiple suppositions as to the etiology of the disease give mute evidence of our ignorance of the basic disturbance. Among the most recent theories are (1) abnormal renal insensitivity to urates; (2) endocrine dysfunctions; (3) selective renal insufficiency for urates alone; (4) a functional disturbance of the vegetative nervous system involving the renal or thoracic sympathetic nerves; (5) an allergic reaction to exogenous or endogenous proteins, not necessarily those high in purines.

Gout is a disease primarily of the male sex (95 per cent). The onset is in persons usually between the ages of thirty-five and fifty; it occasionally may start at sixty or seventy, and rarely occurs in the teens. There is definite hereditary tendency of the disease. Familial gout affected 22 to 81 per cent of patients in five English series and from 7 to 12 per cent in five American series. It is more common in the temperate zone. The incidence is greater in England and France than in this country, but it is apparently increasing in North America. The disease tends to occur more often in spring or fall, but it can occur at any time. It is more likely to occur among the well-to-do (professional classes), tavern keepers and brewers.

Predisposing factors are hereditary, prolonged excess of food, drink and sex, and blood dyscrasias. There are numerous precipitating factors, such as (1) trauma, either minor or major; (2) surgery; (3) overuse of joints; (4) exposure to cold; (5) overindulgences and excesses of eat, drink or sex; (6) certain drugs, that is, salyrgan, ergotamine tartrate, liver extract, gold, dehydrocholic acid and thiamine; (7) purging; (8) severe hemorrhage; (9) transfusions.

Gout is known to be more common in private hospitals than in general hospitals. It is interesting to note that in the Minneapolis General Hospital records from 1933-43, there were only four cases of gout. Strangely enough, in the past six months of 1944, two cases have been diagnosed as classical gout. It has been reported from the Mayo Clinic in Rochester that classical gout constituted at least 5 per cent of those cases seen by the consultants on joint diseases.

Clinical gout can be divided into two great stages. The first stage is characterized by acute recurrent attacks of gouty arthritis followed by complete remission. In the first phase of this stage the attacks are generally monarticular, the patient is usually afebrile and the duration of the attacks is usually a few days (from three to ten), and is followed by complete remission. In the second phase of this first stage, the attacks are usually more frequent and may be polyarticular. The patient is sometimes febrile and the duration of the attacks is from a few days to weeks, and again is followed by complete remission. The duration of this

first stage averages twelve years after the onset of the gout, but the range may be anywhere from three to forty-three years before chronic gout is started. The second stage is that of chronic gouty arthritis. The first phase of this stage is characterized by active gouty arthritis with incomplete remissions, and gradually progresses to the second stage, a relatively inactive chronic gouty arthritis.

Podagra is present in about 70 per cent of the initial attacks. Ultimately it is present in about 90 per cent of the cases of gouty arthritis. Therefore in one-third of the cases the great toe is not involved initially and in 10 per cent of the cases it may never be involved. The hyperuricemia of gout shows no constant relationship to the stage of the disease, to the acute attacks, or to the appearance of tophi. It may or may not be present in the early stages of the disease, but it is usually more marked as the disease progresses. It is present at some time or other in about 75 per cent of the cases. Subcutaneous tophi are found in about 50 per cent of the cases, usually in later stages of the disease. Osseus tophi will ultimately involve about 30 per cent of the cases, while urinary tophi, that is, urate stones or gravel, are passed in about 13 per cent of the patients sometime during the course of the disease. So-called "vascular nephritis" and urate deposits in the renal parenchyma have been reported in about 22 per cent of the cases.

The attacks of acute arthritis typically involve the distal joints, the feet, ankles, hands and wrists; rarely the hips or shoulders, and very rarely the spine. Olecranon bursitis and Achilles tendonitis are often present. The joints are warm and red and bluish in color, appear shiny, may have some edema, and as the attack regresses the skin tends to desquamate and there may be some itching. When podagra is present tenderness is usually on the medial aspect of the joint.

The onset of the attack is usually rapid and reaches maximum intensity within twelve to thirty-six hours. The attacks frequently occur between 2:00 and 7:00 a.m.; the pain may be worse at night, and is often of excruciating intensity. The regression of the attacks is usually rapid and may take place within a few days. In the first stages, the remission is complete.

The diagnosis of gout after the disease has become chronic is not a very difficult one. However, in the early stages of the disease, if it is not looked for, it may be easily confused with many other conditions.

The following is a summary of the twenty-one diagnostic points characteristic of gout mentioned by Dr. Philip S. Hench:

If acute arthritis appears following minor trauma or unaccustomed physical activity, and particularly if the inflammatory reaction is delayed following the injury or is out of proportion to the amount of trauma, or spreads to other joints, gout should be suspected. When acute arthritis develops within the first week following surgery, or in a patient to whom the aforementioned drugs have been administered, or following dietary excesses or hunting and fishing trips, gout should be suspected.

Acute arthritis beginning between the hours of 2:00 and 7:00 a.m., or in the spring or fall of the year should make one look for gout. Suspect as gout any acute arthritis which appears suddenly, runs a severe but brief course, and is followed by complete remission. Consider gout in any patient with chronic arthritis who gives a history of recurrent acute attacks of arthritis with complete remission.

Suspect gout in a sudden attack of acute arthritis in any male over forty years of age. Olecranon bursitis is more common in gout than in any other disease, and its occurrence should make one look for other signs and symptoms of the disease.

Be careful of making a diagnosis of gout in women. Only two to five per cent of the cases occur in women, and in these cases it is likely to be the classical form. Be careful of making a diagnosis of gout in the shoulders, hips or spine, either acutely or chronically affected, and only when there are unmistakable signs of gout or gouty arthritis.

Final Diagnosis: (1) Gouty arthritis; (2) Multiple tophi (extremities and renal pyramids); (3) Hypertensive heart disease; (4) Renal arterio- and arteriolosclerosis; (5) Coronary sclerosis; (6) Myocardial fibrosis; (7) Bronchopnuemonia (8) Uremia, mild.

References

1. Hench, Philip S.: J.A.M.A., pp. 453-459, (Feb. 8), 1941.
2. Neuwirth, E.: Arch. Int. Med., 72:377-387, 1943.
3. Cecil, Russell L.: A Textbook of Medicine Ed. 4, pp. 613-620. Philadelphia and London: W. B. Saunders Company, 1939.

RICE DIET HELPS PATIENTS WITH HIGH BLOOD PRESSURE

Much attention is being attracted by the report of a diet that seems to help patients with high blood pressure and kidney disease.

Dr. Walter Kempner, of Duke University, developed the diet and reported it to the American Medical Association. It consists solely of rice, fruit juices, sugar, vitamins and iron.

Dr. Kempner's theory is that one of the kidney's functions, that of deaminating the amino acids of protein, is disturbed by lowered oxygen supply and the result is high blood pressure. The rice diet was developed to reduce the amount of protein the kidneys have to handle and thus lower the amount of harmful, abnormal substances which he believes causes the high blood pressure.

Not all patients benefit from the diet, though no ill effects from it have been seen. Blood pressures were reduced in about 60 per cent of the patients, he said. The diet, like that for diabetes, must be prescribed individually for each patient so far as amounts of rice and the other ingredients are concerned.

One nutrition authority listening to the discussion on whether the patients would be getting dangerously little protein from the diet, pointed out that the protein in rice differs from that in other cereals.—*Science News Letter,* July 15, 1944.

CLINICAL-PATHOLOGICAL CONFERENCE

ST. LUKE'S HOSPITAL—DULUTH

Arthur H. Wells, M.D., Pathologist

Presentation of Cases

DR. R. S. FORBES: (Case A. 2774) This fifty-seven year-old mechanic was admitted to the hospital four weeks before his death with a chief complaint of pain in the right upper quadrant of two days' duration associated with jaundice. Five months before it was thought that he had the "flu" with pleurisy. The present pain was a sudden sharp stabbing pain in his right upper quadrant of a severe nature causing him to double over. He did not require morphine. He was nauseated but did not vomit. The pain lasted seventy-two hours and did not recur. There were no chills. The day following the onset of pain he noticed jaundice and his urine was dark and his stools light in color. He had lost from 174 to 130 pounds in the last seven months. During this time his appetite had been poor. Fatty food did not cause gastric distress. He drank an occasional beer. Physical examination revealed a large lymph node in the left supraclavicular region of the neck. There was some impairment of breath sounds over the left upper chest. The liver was enlarged three to four finger breadths below the costal margin. X-ray examination led to a conclusion of probable tumor in the upper portion of the left lung.

Laboratory examinations revealed cephalin flocculation—negative, blood urea nitrogen 26 mgs. per cent, creatinine 1.5 mgs. per cent, cholesterol 344 mgs. per cent, and cholesterol esters 68.9 mgs. per cent. Urobilinogen in stool and urine were negative. The galactose tolerance test result was 2.56 grams of sugar excreted. He followed a rather rapidly downhill course. There was a low-grade fever throughout the four weeks in the hospital which was considered to be due primarily to bronchopneumonia. No surgery was performed.

DR. E. C. BAGLEY: (Case 53291) A sixty-eight-year-old white man was admitted about one year ago for repair of an umbilical and an indirect right inguinal hernia both of which had been recently increased in size. There followed an uneventful recovery. He was again admitted one month ago complaining primarily of swelling in the legs, feet and scrotum. For two weeks he had noticed a "stuffy" feeling in his abdomen and for one week there had been swelling of his scrotum and legs. After the swelling started, he began to feel tired all the time. There had been a rash on the scrotum for many months which itched considerably. There has also been some rash on his feet for the last few days. Loss of appetite during the last few weeks was noted. Physical examination revealed a grade IV edema of his lower extremities and scrotum. The abdomen was distended and shifting dullness in the flanks with a fluid wave was found. The veins over the abdomen were distended. An umbilical hernia measuring about ½ x ½ cm. was noted. The abdominal organs could not be palpated because of the severe distention. The blood pressure was 160/80.

Laboratory studies revealed red blood cell count 4,520,000, white blood cell count 11,950, hemoglobin 13.25 grams and differential count 58 per cent neutrophiles, 4 per cent eosinophiles and 38 per cent lymphocytes. On two occasions the urine was concentrated to a specific gravity of 1.020 and there were no pathologic findings. Blood urea nitrogen was 16.3 mgs. per cent, creatinine 1.5 mgs. per cent, chlorides 486 mgs. per cent, dextrose 99.6 mgs. per cent, blood plasma protein included albumin 4.038 grams, globulin 2.4 grams and fibrinogen 0.45 grams per 100 c.c. The icterus index was 33, fractional Van den Bergh quantitative direct 0.16 mgs. per cent, indirect 1.72 mgs. per cent. Blood cholesterol 150.6 mgs. per cent, cholesterol esters 60.6 mgs. per cent, bromsulfalein test, one half-hour specimen had 9 per cent, one hour specimen had slight trace. Cephalin flocculation test was a 4 plus reaction. Benzoic acid test resulted in 9.35 grams benzoic acid excretion in six hours, galactose tolerance test 1.84 grams excreted in six hours. Four thousand five hundred c.c. of acitic fluid from the abdominal cavity had a specific gravity of 1.010 white blood cell count 320, red blood cell count 7,550, with a differential count of 85 per cent lymphocytes, 10 per cent neutrophiles, and a quantitative protein determination of 1.15 grams per cent.

DR. J. R. MANLEY: (Case 59355) A twenty-seven-year-old-shipbuilder was apparently in good health until two weeks before admission, when he developed chills, fever, general malaise and weakness. As these symptoms subsided he began noticing a continuous dull pain in the epigastrium which did not vary with meals. There was constant nausea and occasional vomiting of any kind of food. He first noticed jaundice two days before admission. He had a low-grade fever reaching 100.5° at its height and gradually fell to normal over a period of eight days in the hospital. His white count was 5,850, hemoglobin 14 grams, red blood cell count 4,570,000, differential count was 52 per cent neutrophiles, 42 per cent lymphocytes, 3 per cent eosinophiles, and 3 per cent monocytes. The urinanalysis was normal excepting for 3 plus albumin on one occasion. Bleeding time and clotting time were normal,

icterus index rose to 62 during the first week then gradually fell to 14 the day of discharge, two and one-half weeks after admission. The blood cholesterol was 161 mgs. per cent and cholesterol esters 42 mgs. per cent. These returned to normal the day before discharge, when they were 206 mgs. per cent and 118 mgs. per cent, respectively. The cephalin flocculation test remained 4 plus throughout. Galactose tolerance test was normal at 2.5 mgs. of sugar excreted. The quantitative Van den Bergh was 4.6 mgs. per cent with biphasic reaction. The benzoic acid test resulted in an excretion of 3.2 grams of benzoic acid, a normal figure. A twenty-four-hour urine revealed 2.4 mgs. of urobilinogen excreted and there was an average excretion of 2.3 mgs. of urobilinogen per day in a four-day stool specimen collection. X-ray examination revealed a nonvisualized gall bladder. The patient was greatly improved at the time of discharge and there has been no further recurrence of symptoms after four months.

Autopsy Findings

DR. A. H. WELLS: (Case A. 2774) A tumorlike mass solidified all of the structures of the upper mediastinum and invaded the entire mediastinal aspect of the left upper lobe of the lung extending for a distance of 2 cm. into the lung tissue and apparently originating from the main bronchus leading to the upper lobe, which structure was filled with a grayish, granular, friable, tumorlike tissue. The adjacent lymphnodes were moderately enlarged, gray, with blackish areas and solidified to the surrounding structures in the mediastinum. A few small, scattered areas of grayish, tumorlike tissue less than 5 mm. in diameter were found throughout both lungs. A supraclavicular lymphnode on the left measured from 2 to 3 cm. in diameter and had a hard, finely granular, grayish-cut surface. Retroperitoneal lymphnodes in the upper portion of the abdomen immediately underlying the common duct were enlarged up to 4 cm. in diameter and had the same tumorlike structure. The common duct immediately passed over the enlarged masses and became extremely tense and its lumen was obviously obstructed by pressure from the outside. There were 8 umbilicated and rounded, grayish, granular-surfaced masses ranging up to 6 cm. in diameter scattered through the liver. There were no calculi in the gall bladder or common duct. Rather hard, grayish, finely granular areas had displaced bony trabeculi in the sternum, ribs, and bodies of lumbar vertebræ. The remainder of the left upper lobe was almost completely nonair-containing and had an extensive consolidation with grayish purulent matter on the cut surfaces. There appeared to be some atelectasis and in the periphery there were several small abscesses measuring up to 8 mm. in diameter filled with thick, grayish pus. These were connected with smaller air passages which appeared mildly dilated.

Microscopic Study.—Sections from the tumor masses in the left upper lobe, upper mediastinum, left supraclavicular lymphnode and lymphnodes under the common duct as well as masses in the liver all had the same slender, small, hyperchromatic, anaplastic epithelial cells typical of the reserve cell carcinoma of bronchogenic origin.

Discussion

DR. A. H. WELLS: We have presented the summarized studies of three patients with liver and biliary system disease as diagnostic problems, the answers of which were satisfactorily arrived at by a combination of clinical and laboratory studies. It is generally agreed that the history and physical examination are decidedly of greater importance than laboratory studies in the great bulk of diagnostic problems involving these diseases. There are, however, a number of circumstances in which the internist or surgeon wants all of the aid that he can possibly get to arrive at the proper diagnosis. During the past decade the hospital laboratory with its means of accurately measuring various physiological processes has become an ever-increasingly practical aid in these difficult cases so that it is now essential to the modern care of these patients.

The most common diagnostic problem by far is that presented by a case of painless jaundice in which there is very little or no evidence of previous cholelithiasis. Under these circumstances the laboratory seldom fails to give valuable information necessary for the proper care of the patient. The principal decision to be arrived at is whether the patient has a medical or surgical condition. Since the patient generally presents himself within a few days of the onset of jaundice the various selected laboratory tests will nearly always be of diagnostic aid when properly interpreted. The cephalin flocculation test, blood cholesterol and cholesterol esters, galactose tolerance test, benzoic acid excretion test, quantitative urobilinogen in the urine and quantitative measurement of the direct and indirect types of bilirubin in the blood are all means of determining whether the liver cells are functioning properly. Other laboratory procedures have been described as helpful. Since no one of the various tests can be relied upon to give conclusive evidence of minimal lesions, the results of several must be summarized into a single final conclusion.[5,9] In severe cases of diffuse liver cell injury nearly all of the tests will be strongly positive within a few days of the onset of jaundice. Whereas, in the usual case of mechanical obstruction of the common duct the tests will indicate normal liver cell function within the first two or three weeks of the onset of jaundice providing there has been no clinical evidence of a preceding recent obstruction of the common duct with resultant ascending cholangeitis.

In Case A. 2774 a principal complaint of right upper quadrant cholic-like pain precipitating the onset of jaundice might have led to the diagnosis of common duct stone and a choledochotomy. However, the internist and his consultants cleverly combined the other various clinical, x-ray and laboratory findings to arrive at the proper diagnosis. It will be noted that the various laboratory tests with particular emphasis upon the sensitive cephalin flocculation test[1] were negative for diffuse disease of the liver. The blood cholesterol was elevated with normal cholesterol esters. Biliruben of direct Van den Bergh type far exceeded that of the indirect type.[8] All of these tests point to obstructive jaundice. The quantitative urobilinogen in the stool and urine were entirely negative. The latter finding in the experience of Dr. Cecil Watson[11,12] and others is very strong evidence of obstruction of the common duct due to malignancy. Only occasional cases of common duct stone or diffuse disease of the liver will cause a complete absence of urobilinogen in the stool over a period of four days.

Case 53291 is a good example of a case of cirrhosis of the liver in which many physicians would be satisfied

with their diagnosis of cirrhosis based on the clinical manifestations alone. One simple laboratory procedure absolutely proved this diagnosis. The other laboratory procedures led to a presumptive diagnosis of cirrhosis. A liver biopsy obtained with the Vim-Silverman biopsy needle[10] revealed a moderately advanced cirrhosis of the liver. Dr. F. W. Hoffbauer has obtained "no better than three out of four positive biopsies" using the Silverman needle. Although he has not encountered any serious bleeding to date he remains cautious in the use of the punch biopsy of the liver. The various liver cell function tests may or may not be positive for interference with liver cell function in cirrhosis.[13] This probably depends on the amount of degenerative change in liver cells associated with the network of scar tissue throughout the liver. Generally the cephalin flocculation test[2] is positive along with one or more of the other tests listed above. The bromsulfalein excretion test[7] can frequently be used to great advantage in the 50 per cent of cases of cirrhosis where there is no clinical jaundice. Quick's benzoic acid excretion test was strongly positive in this case. A decrease in the albumin-globulin ratio of blood plasma proteins[3,6] has been found to be an important diagnostic and prognostic test in cirrhosis of the liver. Complete studies of the acitic fluid makes it possible to classify it definitely as a transudate or exudate.

Case 59355 was clinically typical of a so-called "acute catarrhal jaundice." However, the surgeon wanted confirmatory evidence which the laboratory supplied. The extremely low urobilinogen in the stool makes this case an exception of the rule stated above. However, it will be noted that the urobilinogen in the urine was higher than that in the stool, indicating an interference with liver cell function. The blood biliruben and cholesterol esters paralleled each other in this case revealing the increase in severity of the disease and later the return toward normal liver cell function. Blood cholesterol and cholesterol esters determinations are best used in series. The esters may disappear completely from the blood in a few days in severe forms of hepatitis while the cholesterol remains normal or slightly decreased. The cephalin flocculation test as usual showed its great sensitivity to diffuse liver cell injury. It is reasonable to assume that punch biopsies of the liver for diagnosis of the various forms of acute hepatitis[4] may become advisable with a better knowledge of the limits of safety of the procedure. With improved techniques needle biopsies of the liver could become to the diagnosis of liver disease what bone marrow aspiration is to hematology.

References

1. Hanger, Franklin M.: The flocculation of the cephalin-cholesterol emulsions by pathological sera. Tr. Am. A. Physicians, 53:148-151, 1938.
2. Hanger, F. M., and Patek, Arthur J.: The cephalin flocculation test in cirrhosis of the liver. Am. J. M. Sc., 202:48, 1941.
3. Israel, H. L., and Reinhold, J. G.: Detection of cirrhosis and other diseases of liver by laboratory tests. J. Lab. & Clin. Med., 23:588-596, (Mar.) 1938.
4. Kirshbaum, J. D., and Popper, H.: Toxic Hepatitis: Intermediary fatal form with enlargement of the liver; a clinical and pathologic study. Arch. Int. Med., 65:465 (Mar.) 1940.
5. Matteer, John G., Baltz, James I., Marion, Donald F., and MacMillan, James M.: Liver function tests. J.A.M.A., 121:723-728, (Mar. 6) 1943.
6. Post, Joseph, and Patek, Arthur J.: Serum proteins in cirrhosis of the liver. Arch. Int. Med., 69:67-89, 1942.
7. Quick, Arnold J., Ottenstein, Harold N., and Weltchek, Herbert: Synthesis of hippuric acid in man following intravenous injection of sodium benzoate. Proc. Soc. Exper. Biol. and Med., 38:77-78, (Feb.) 1938.
8. Sepulveda, B., and Osterberg, A. E.: Serum biliruben: A procedure for the determination of indirect and direct values. J. Lab., Clin. Med., 28:1359-1368 (Aug.) 1943.
9. Steigmann, F., Popper, Hans, and Meyer, Karl A.: Liver function tests in clinical medicine. J.A.M.A., 122: 279-285, (May 29) 1943.
10. Tripoli, C. J., and Fader, D. E.: The differential diagnosis of certain diseases of the liver by means of punch biopsy. Am. J. Clin. Path., 11:516-527, (June) 1941.
11. Watson, C. J.: Regurgitation Jaundice: Clinical differentiation of the common forms, with particular reference to the degree of biliary obstruction. J.A.M.A., 114:2427-2432, (June 22) 1940.
12. Watson, C. J.: The bile pigments. New Eng. J. Med., 227:665-672, (Oct. 29); 705-711, (Nov. 5) 1942.
13. Watson, C. J.: Cirrhosis of the liver: Clinical aspects with particular reference to liver function tests. Am. J. Clin. Path., 14:129, (Mar.) 1944.

FAILURE OF SURGICAL WOUND HEALING

(Continued from Page 640)

most frequent result is a granulomatous mass in the operative site. However, sinus tracts, lack of wound healing and improper healing of ulcerated surfaces are common. Hilding[9] believes that talc from surgical gloves will cause a chronic conjunctivitis especially after cataract operations.

Kaolin, an aluminum silicate, has been found by Cohn, White and Weyrauch[4] to produce a chronic granulomatous reaction in the human and rabbit gastric mucosa when fed by mouth. LeRoy Gardner[7] has demonstrated the same chronic tuberculous-like pathologic changes due to a variety of silicates when given to animals by inhalation or intravenous or tissue injections.

Conclusion

Serious complications in a wide variety of operative procedures have resulted from the use of dusting powders on surgical dressings, rubber gloves, drains and dams as well as for internal medications and coating for rectal suppositories. It is important that physicians realize the potential danger of these irritating substances and either eliminate them by careful washing of powdered gloves, before touching barren tissues or by finding some soluable, nonirritating dusting powder if a dry surgical glove technique is to be continued. Seelig[12] has suggested the use of potassium bitartrate, however. At present there is no agreement as to the proper substitute for the talc. It is suggested that washing the talc off the rubber gloves is not sufficient.

References

1. Antopol, William: Lycopodium granuloma. Arch. Path., 16:326, (Sept.) 1933.
2. Antopol, William, and Robbins, Charles: Lycopodium granuloma resulting from use of anal suppositories. J.A.M.A., 109:1192, (Oct. 9) 1937.
3. Byron, F. X., and Welch, C. S.: Complication from use of glove powder. Surgery, 10:766, (Nov.) 1941.
4. Cohn, A. L., White, A. S., and Weyrauch, H. B.: Kaolin granuloma of the stomach. J.A.M.A., 117:2225, (Dec.) 1941.
5. Erb, I. H.: Lycopodium granuloma. Surg., Gynec. & Obst., 60:40, (Jan.) 1935.
6. Feinberg, Robert: Talcum powder granuloma. Arch. Path., 24:36, (July) 1937.
7. Gardner, LeRoy: The pathologic reactions in various pneumonoconiosis. J.A.M.A., 101:594, (Aug. 19), 1933.
8. German, William McKee: Dusting powder granulomas following surgery. Surg., Gynec. & Obst., 76:501, (April) 1943.
9. Hilding, Anderson: Personal communication.
10. Owen, M. A.: Peritoneal response to glove powder containing talc. Texas State J. Med., 32:482, (Nov.) 1936.
11. Ramsey, Thomas L.: Magnesum silicate granuloma. Am. J. Clin. Path., 12:553, (Nov.) 1942.
12. Ramsey, Thomas L., and Douglass, Fred M.: Granulomatous inflammation produced by foreign body irritants. J. Internat. Surgeons, 3:3, (Feb.) 1940.
13. Seelig, M. G.: Personal communication.

PIONEER PHYSICIANS OF FARIBAULT COUNTY

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(Continued from July issue.)

Joseph Edwin Couper

Joseph Edwin Couper was born in 1858, at Morristown, New York. He attended Carleton College, and the next few years pursued his medical education at St. Louis College and Hahnemann Institute, Philadelphia, where he graduated in 1881. The following year he was an intern at Ellis Island Hospital and then entered practice at Blue Earth City. An announcement card appears in the March 31, 1882, issue of the *Blue Earth City Post.*

Doctor Couper was a short man, quite fleshy. He was a perfect gentleman with a very kindly. likable disposition. He was a good physician practicing according to the homeopathic system. For miles around, his treatment of obstetrical cases was praised and he had records of over 2,000 cases attended during his twenty-three years of practice. He was never known to have refused a call, winter or summer. He thought Faribault County the garden spot of the world and had an ambition to own 1,000 acres of its rich farm lands. Starting the buying of land in his early years of practice he realized his ambition shortly before his death and did own 1,000 acres free from debt.

As a well-educated man, he enjoyed reading and especially music. He was a good pianist and had a fine tenor voice. His hobby always was the outdoors, trees, birds, flowers. He was a great hunter, roaming the prairies when the prairie chickens were plentiful and hunting the marshes for ducks in the fall. At that time of year, to the detriment of his practice, his well-blanketed team and buggy could be seen toward evening under sheltering trees on the east bank of Pilot Grove Lake, while he was out in the cat-tails of the sloughs where waterfowl abounded. He owned a fine Parker 12-gauge gun and was the best wing shot in the country.

He had a Lindeman buggy and sleigh and had a beautiful buffalo coat and robe.

Shortly before his death, he took his only child, Helen, on her birthday out to one of the farms and they rode ten miles back to town on a load of wheat. He planned to retire to one of the farms in a year or two, when death suddenly overtook him in the form of an apoplectic stroke in 1906.

Doctor Couper was a member of the Presbyterian church and the Masonic lodge.[7,14,17,19,34,38]

Joseph E. Stauffer

Joseph E. Stauffer was born in Nappanee, Indiana, September 18, 1854. His early education was in the schools of Elkhart County, Indiana. He continued his studies in the Northwestern Normal College at Valparaiso, where he spent the winter of 1876-7. He entered the medical department of Butler University of

Indianapolis and was graduated in the spring of 1882, after completion of the regular course. He then continued his medical studies at Rush Medical College where he graduated in 1883.

The same year, 1883, he located at Winnebago City, where he practiced until 1891. He started in association with Dr. J. H. Adair, also a Rush graduate, who soon afterward moved to Owatonna. While at Winnebago City, Dr. Stauffer had an extensive practice and was said to have been a fine physician and citizen.

In 1891, he went to the state of Washington, locating in Everett. In 1901, he was elected county physician and in the same year, county health officer. In the History of Puget Sound Country, the following is said of him: "Doctor Stauffer is a man of broad learning, especially in the lines of his profession, and continued reading and research add to his knowledge and promote in large measure his efficiency and skill."

In November, 1886, he married Kate B. Holley, a native of Minnesota. One daughter, Elizabeth, was born in Winnebago City.

Doctor Stauffer died at his home in Everett, September 26, 1933.[1,4,30,40]

Granville I. Smart

Granville I. Smart was born in Fryeburg, Maine, November 14, 1853, the son of Ira Granville Smart. He was one of eight children. He graduated from Fryeburg Academy and attended Bowdoin College, Brunswick, Maine, teaching school between semesters. He then attended Dartmouth and graduated from the Medical School in 1880. On June 18, the same year, he married Martha Plummer in Haverhill, New Hampshire.

After three years of practice, part of it in Grove City, Minnesota, Dr. Smart located in Blue Earth City, October 18, 1883, where he parcticed until 1901. As he had never been rugged in health, the climate and demands of practice became increasingly difficult and he went to Ontario, California, where he practiced a little and died April 10, 1906.

His family consisted of six children, three of whom are living (1942): Elliott P., Murphys, California, a physician; Esther Smart Mcleod, Westwood, Village; Los Angeles; and Granville I., Coalings, California.

Doctor Smart was a high-class physician and fine gentleman. He was handicapped by poor health at times but spent various periods in graduate study and had a large practice. He was a Mason and member of the Methodist church.[7,14,17,42,43]

Ferdinand N. Hunt

Ferdinand N. Hunt was born in Bond County, Illinois, in September, 1857, the son of Nehemiah A. Hunt, pioneer physician of Blue Earth County. He graduated from Mankato High School and attended Carleton College. He then taught school three years at Fairmont. In 1883 he graduated from St. Louis Medical School and located at Fairmont. He took over the practice of his brother, David Winslow Hunt, who had been the first physician there. He continued practice in Fairmont until 1892 when he sold his practice to Dr. W. J. Richardson of Hutchinson. A partnership was then formed with Dr. Granville I. Smart of Blue Earth City. In the late '90's Dr. D. W. Hunt came to Blue Earth City and remained three years.

In 1882 he married Ida L. Cadwell, daughter of a pioneer merchant, Alpha D. Cadwell. Two sons were born of this union.

During his twenty years of practice at Blue Earth City he went through the hardships of the country doctor on the prairie. The first laparotomy in the community was done in the year 1895 by Dr. W. J. Mayo at the home of Dr. Hunt's patient, Mrs. Charles Pride. It was for a large ovarian cyst. In the years that followed, Doctor Hunt did some surgery, appendectomies, herniotomies, et cetera. These were done in the doctor's home or that of the patient. His outfit consisted of a portable homemade operating table which could be folded and carried in buggy or sleigh, a portable sterilizer and cases for instruments and dressings. A good many operations were done by lamplight and several times by candlelight. Chloroform was the anesthetic used. Doctor Hunt made an annual trip to clinics such as J. B. Murphy's and Ochsner's in Chicago and frequent trips to the Mayo Clinic.

One of the greatest comforts the physicians of those days had were the Lindeman buggies and sleighs, made in Faribault of second growth ash. They were black with straw-colored wheels and runners and rode like a pullman. It was surprising how quickly the automobile took the place formerly occupied by the horses in the affections of the doctor. Doctor Hunt's first automobiles were the one-cylinder Cadillac, the Stanley Steamer, the high-wheeled Holsman and then the first Fords.

Doctor Hunt was a lifelong Republican, a member of the Presbyterian church which had been established by his uncle, Rev. Jacob Conrad, and lodges, including the Odd Fellows and Masons.

In 1914 with his son, Dr. Roscoe C. Hunt, he returned to Fairmont where he established the first hospital.

After over fifty years of active practice he died February 1, 1934, two weeks after a head injury caused by a fall on the ice. He was survived by his widow and two sons, Dr. Roscoe D. Hunt of Fairmont and Rollo F. Hunt, a lawyer of Duluth.[17,34]

Frank L. Durgin

Frank L. Durgin was born in Maine in 1852. He was educated in Baptist College in Hillsdale, Michigan, and started practice in Winnebago City shortly before 1890. He had an extensive practice for many years and was rated as a very good physician. For some years he was a partner of Dr. Hunes. He was quite active in politics and filled many positions of trust in the village and county. He was trustee for many years and president for one year of Parker College. He died about 1936 in the Baptist Old Folks Home (formerly Parker College).[1,3,4,17]

Nathan Saterlee

Nathan Saterlee was born in New York. He began practice in Winnebago City around 1875 after having been educated in an eastern university. He had practiced for thirty years in Beaver Dam, Wisconsin, previous to locating in Winnebago City. There is some doubt as to his medical education and knowledge, but he was a gentleman of the old school. Every day, rain or shine, he wore a stovepipe hat, a long black frock coat and a white shirt with a ruffled bosom. His father was a soldier in the war of 1812 and his grandfather was a soldier with General Washington at Valley Forge. After being in Winnebago City about ten years he moved to Wells in 1886 or 1887 where he practiced until after 1895. He later moved to Amboy where he stayed a few years.[4,6,11]

John L. Livingston

John L. Livingston came to Wells, about 1891, the time of Doctor Straw's death. He left Wells in 1899 and went to Washington State where he went into the banking business. He had been a Methodist preacher before studying medicine, and there seems some doubt as to the quality of his medical education. He died at Long Beach in 1940 at the age of eighty-eight.[1]

Frederick Tillier

Frederick Tillier, a native of Norway, graduated from the University of King Frederick, Christiana, Norway, in 1888. He obtained a Minnesota license in 1891. He located in Blue Earth City in 1896 where he practiced for a few years. No further record is available.[1,19,23]

John Aaron Broberg

John Aaron Broberg was born in Sweden, July 5, 1862. He came to America with his parents when four and a half years old, settling in Wisconsin. He received a B.A. degree from Valparaiso University in 1888 and an M.D. degree from Michigan University in 1892. The same year he started practice in Delavan, following Doctor Mikkelsen who had moved to Wells. In 1899 he moved to Blue Earth City where he was associated with Dr. F. N. Hunt for some years. He still (1942) lives in Blue Earth but is not engaged in active practice.

Doctor Broberg was a physician of the highest type, honorable in all respects and acquired a considerable property by careful investments and frugal saving. He invested for years in second mortgages bearing a high rate of interest. Several years before the depression he quietly began selling these mortgages. He sold at any price he could get. The bankers of the community and others thought he was crazy but he said nothing, cleaned up and invested in Government bonds. When the crash came he was in a good position financially while the critics were situated otherwise. Doctor Broberg had an uncanny ability in making good investments.

As a physician, he made his money the hard way—no surgery but long drives and much obstetrics. He took poor care of himself, riding in open rigs with wild unbroken horses. As a collector he never had an equal. He could collect from those who owed every other doctor in the community. It was this ability that made him a wealthy man, together with his frugal habits.

He was president of the school board for many years and used the same good business principles as in his own affairs. He was a highly accomplished linguist being able to speak fluently and read the Scandinavian languages, German, French and Spanish. He was also a Greek and Latin scholar. As a speaker, he also had an entertaining manner and many thought that he should have been a college instructor.

Doctor and Mrs. Broberg live at Blue Earth (1942). They have two daughters, one a practicing physician.[17,19]

Peter F. Holm

Peter F. Holm was born in 1872. He graduated from the Watertown, S. D., high school and from Bellevue Hospital Medical College in 1898. He spent a year in Hackensack General Hospital and located in Wells, May 1, 1899. Doctor Holm has carried on a large general practice ever since, a period of over forty years. He retired several years ago but on July, 1942, reëntered practice at Wells to help out during the war and release other younger men for service.[6,17]

John W. Kamrar

John W. Kamrar, a druggist, was born in Blue Earth, November 14, 1865. When a boy he moved with his parents to Seeley Township in the eastern part of the county. There he attended school in a log schoolhouse. His father, Henry Kamrar, was the first blacksmith in the county and hauled his tools from Saint Paul by team and wagon. As a boy his job was herding cattle and he made several trips across country to Montana and the Dakotas with herds of cattle and horses.

After getting the education available in a frontier village, Mr. Kamrar entered the drug store of Schuler and Way. There he learned the drug business which he carried on for over fifty years. After being in this store for seven years he and Dr. A. J. Franklin formed a partnership in the drug business which they carried on for several years. About 1896 Mr. Kamrar built a new building and in it ran his drug store until failing health caused him to sell in 1940.

His first wife was Mamie T. Temple, daughter of Frank Temple, one of the oldest settlers along the river north of Blue Earth. There are two daughters, Harriet and Frances. Mrs. Kamrar died May 28, 1933, after a long illness. On September 15, 1934, he married Jenivieve Turner.

While John Kamrar is not a physician, no medical history of Faribault County would be complete unless his name were mentioned. In the early days the druggists were depended upon in many ways in sickness. With doctors scarce and away so much on long trips, it was not at all uncommon for druggists to prescribe for and give temporary treatment for acute illness and accidents. Mr. Kamrar did a great deal of this as necessary. He was an expert anesthetist and gave chloroform and ether for many operations, such as fractures, which needed more care than the doctor alone could give. The doctor had his office in the back of the drug store and the druggist acted also as office girl, collector, et cetera.

Mr. Kamrar had the reputation of knowing more people than any one in the county, and he knew them by their first names. He was a prominent figure in many civic affairs, and was quite a hunter, but his hobby was horses and he especially enjoyed riding, at which, due to the years he spent in the saddle, he was an expert.

Although not in the best of health at this time, Mr. Kamrar is active. He has for years collected photographs of old settlers and has the largest collection in this part of the state.

Sources of Information

1. Minnesota State Licensing Board: Records and directory.
2. Martin County Sentinel.
3. Winnebago Press.
4. Communication—Henry Sherin of Winnebago, Minn., ninety years old, many years a publisher.
5. Communication—Mrs. Florence Straw Jones, 519 First Street, Bismarck, N. D.
6. Communication—Dr. Peter Holm, Wells, Minn.
7. Blue Earth City Post.
8. Blue Earth City Advocate.
9. Minnesota South West, Blue Earth City, Minn. "Westward the Star of Empire Takes Its Way."
10. Blue Earth City News.
11. Communication: Senator Frank E. Putnam, Blue Earth, Minn.

12. Communication: Mrs. Chas. H. Freer (Floy Ackerman), 3019 N. E. 63 Ave., Portland, Oregon.
13. Interview: Mrs. Belle (Anderson) Sly, Blue Earth, Minn.
14. Interview: John W. Kamrar, Blue Earth, Minn., Blue Earth druggist for fifty years.
15. Interview: Mrs. John McCoy, Blue Earth, Minn.
16. Interview: W. E. C. Ross, Blue Earth, Minn
17. Personal knowledge: Dr. R. C Hunt, Fairmont, Minn
18. Communication: Floyd Franklin, Elmore, Minn.
19. Communication: Dr. J. A. Broberg, Blue Earth, Minn.
20. Communication: Mrs. A. C. Jacobs, Elmore, Minn.
21. State Historical Society.
22. Communication: Henry S. Dearborn (son-in-law).
23. American Medical Association.
29. Budd's History of Martin County.
31. Memorial Record, Faribault, Martin, Watonwan and Jackson Counties. Chicago: Lewis Publ. Co., 1895.
32. Communication: Mrs. Milo (Humes) Haight, Winnebago, Minn.
33. Communication: Miss Frances M. Hunt, Worcester, Mass.
34. Interview: Mrs. F. N. Hunt (Ida Cadwell), Fairmont, Minn.
35. Communication: George W. Jones, Secretary, Oberlin College.
36. Minnesota Medicine, April, 1942.
37. Interview: Mrs. George (Temple) Goetz, Fairmont, Minn.
38. Communication: Miss Helen Couper, King Cole Hotel, Minneapolis, Minn.
39. Communication: Mrs. J. E. Stauffer (Kate B. Holley), 3007 Hoyt Ave., Everett, Wash.
40. History of Puget Sound Country.
41. Communication: Mr. W. H. Ogden, Floral City, Florida.
42. Communication: Fred V. Cummings, Blue Earth, Minn., druggist since the early '90's.
43. Communication: Mrs. E. S. Macleod (Esther Smart), 436 Landfair Ave., W. Los Angeles,

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THE TREATMENT OF THE TUBERCULOUS WOMAN DURING PREGNANCY

Pregnancy was advised at one period as a preventive or curative measure. Later the opposite course was advocated and the therapeutic abortions were advised in all cases where the pregnancy was discovered before the fifth month.

Tuberculosis is an infectious disease which annually kills thousands of women of childbearing age even though pregnancy does not exist. A study of tuberculous women, both pregnant and nonpregnant, was undertaken directing the main effort of therapy against the diseased process rather than against the normal physiological process to the end that the tuberculous pregnant woman could go to full term without interfering with her recovery from tuberculosis.

The woman with active tuberculosis should have bed rest plus such additional methods of treatment as pneumothorax and other collapse therapy which would be used if pregnancy were not present. Following labor more intensive treatment may be indicated to prevent a spread of the disease. Therapeutic abortion should be done only if a condition is found, other than the tuberculosis, to warrant it.

The woman with an arrested case of tuberculosis who becomes pregnant after leaving the sanatorium should receive more careful prenatal care than if tuberculosis did not exist. Many return to the sanatorium for care. Treatment varies with the condition. In general they receive modified bed rest for two or three months prior to delivery and strict bed rest for a month or six weeks following delivery. They are then allowed some activity and sent home when their babies are about three months old. The babies are isolated in the nursery until this time. Results in a series of cases extending over a nineteen-year period show that among ninety-two pregnant women who were studied 21 per cent died, while among 2,230 women of the same age group discharged for the first time from the sanatorium there were 837 deaths or 39 per cent. The group is too small for definite conclusions but it does seem to indicate that when tuberculosis is properly treated pregnancy does not adversely affect it. The higher death rate in the nonpregnant group is unexplained.

Treatment of the pregnant woman with tuberculosis by the most modern means of combating the disease, together with equally modern prenatal care, apparently offers her as good a chance for recovery from her tuberculosis as though pregnancy did not exist.—"The Treatment of the Tuberculous Woman During Pregnancy," E. S. Mariette, M.D., Leonard M. Larson, M.D., J. C. Litzenberg, M.D., *American Journal of the Medical Sciences*, June, 1942. Tuberculosis Abstract, July, 1944.

President's Letter

EXAMINING VETERAN PATIENTS

The appeal of Veterans' Administration officials for aid from the physicians of the state in providing diagnostic services for disabled veterans, noted elsewhere in this issue, should have immediate and wholehearted response from physicians in private practice.

The number of veterans eligible for such service, following this war, will dwarf by many thousands the number handled after World War I.

New facilities contemplated or under construction are confined chiefly to new hospital beds. But many veterans who do not require hospital beds will need repeated physical examination and diagnostic service of all kinds. To handle all of this service at Fort Snelling, a new unit and separate staff will be required, regional officials believe.

Furthermore, veterans will have to be brought in from all parts of the state and housed here for the sole purpose of examination, and then returned to their homes, sometimes, at frequent intervals.

It is only common sense that such diagnostic work should be done near the veterans' own homes where facilities are already in existence and civilian physicians can provide the service.

The members of the Minnesota State Medical Association will coöperate in every possible way to see that the men who have borne the burden of combat on many fronts in this global war have the best medical service it is possible to give them when they come home again.

This is a chance to provide an important part of that service, in coöperation with Veterans' Administration authorities, and at the same time to avoid any unnecessary building of government establishments.

Every doctor should be willing to volunteer his services for this work.

President, Minnesota State Medical Association.

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

LANATOSIDE C (CEDILANID)

THE heart drug Lanatoside C, marketed under the name of Cedilanid, is coming to be recognized as a most valuable adjunct in cardiac therapy.

Lanatoside C is considered to be the most active and least toxic of the three cardioactive glucosides contained in digitalis lanata. It is a crystalline substance which has no chemical relationship to the glucosides of digitalis purpurea but is similar in its action on the heart. Lanatoside C has the advantage over digitalis purpurea in that it does not vary in strength, does not, therefore, require biological assay, and its dosage is determined in milligrams. This permits more accurate and safer dosage although individual variations in reaction to drugs in general must still be taken into consideration in the case of this drug as well as in all others.

The most extensive clinical investigation of Lanatoside C was made by Fahr and LaDue[1] at the University of Minnesota Medical School. Another report on the clinical use of the drug by Sokolow and Chamberlain[2] confirms the favorable report of its clinical value, particularly in its rapid effect on decompensated hearts on intravenous administration.

Lanatoside C is produced by the Sandoz Clinical Works under the trade name of Cedilanid and comes in solution 0.2 mg. per c.c. for intravenous use and in tablets of 0.5 mg. for oral administration.

As a result of clinical trial, Fahr and LaDue recommend 8 c.c. of the solution intravenously for most prompt action while Solokow and Chamberlain suggest 6 c.c. to be followed with 2 c.c. every three or four hours as indicated. Rapid decompensated hearts, whether fibrillating or not, were promptly slowed, frequently in a few minutes. In a relatively high percentage of cases of fibrillation, the rhythm was corrected to a normal sinus type. The tablets may be given orally in a dosage of 3.5 mg. in one dose, to be followed in twelve or twenty-four hours by 2.5 mg. more. A maintenance dose varies from one to five tablets (.5 to 2.5 mg.) per day or may be met with ordinary digitalis preparations.

Lanatoside C given intravenously (similar to strophanthin) accomplishes full digitalization so promptly and slows a rapid heart rate due to various causes so quickly that it is being used more and more not only in emergencies but routinely in many hospitals as a timesaver in hospitalization.

References

1. Fahr, George, and LaDue, John: A preliminary investigation of the therapeutic value of Lanatoside C (Cedilanid). Am. Heart Jour., 21:133-150, (Feb.) 1941.
2. Sokolow, Maurice, and Chamberlain, Francis L.: Clinical evaluation of Cedilanid. Ann. Inst. Med., 18: (Feb.) 1943.

POSTWAR MEDICAL SERVICE

A CONSTRUCTIVE move instigated by Dr. E. Mendelssohn Jones, President of the State Medical Association, has been the appointment of a committee on Postwar Medical Service. As stated in Doctor Jones' presidential address which appears in this issue, the medical profession of the state has responsibilities which require an aggressive and not passive attitude in promoting better medical care for the citizens of Minnesota after the war.

With this in mind, this newly appointed committee on Postwar Medical Service is collecting factual data about every district in the state—population, present and prewar supply of physicians, postwar need of physicians and hospitals, etc. A questionnaire is also being sent to the 1,400 doctors from Minnesota who are in the armed services to ascertain their plans and wishes after the war—whether they plan to remain in service or return to their former locations, whether they wish to have further hospital training or other postgraduate work, and whether they prefer to locate in a metropolitan or rural area.

Thus will the Committee on Postwar Medical Service be able to assist physicians from Minnesota now in service in finding desirable locations, being in possession of information as to localities in need of additional practitioners and spe-

cialists. The success of the effort to have a planned program will depend largely on the response and coöperation of local county societies and physicians contacted in service.

Interesting in this connection is the announcement that as a result of a survey made recently by the American Hospital Association, there will probably be a billion dollar expansion of non-federal hospitals after the war. About 50 per cent of hospitals reporting have some plan for expansion; some already have the funds needed, while others will attempt to raise money from private financing, public campaigns or subscriptions. Others will seek assistance of governmental funds.

SOCIAL SECURITY PLANK OF THE REPUBLICAN PLATFORM

Minnesota physicians will be especially interested in the background of the plank on health which was written into the Republican platform and unanimously accepted by the convention at Chicago.

Actually the statement was conceived and written by State Senator J. V. ("Vin") Weber of Slayton who was one of Minnesota's two members on the Resolutions Committee, Mrs. F. Peavey Heffelfinger of Minneapolis being the other one. Senator Weber presented his statement before the Framing Committee of which Senator Robert P. Taft was chairman where it was accepted unanimously, as presented.

The complete declaration of policy on social security, of which Senator Weber's statement formed a part, is reprinted below for the benefit of physicians who may have overlooked it and because it embodies prevailing medical thought on problems of social security, generally, and on government participation in programs related to health and medicine.

Under the heading of social security the platform states:

Our goal is to prevent hardship and poverty in America. That goal is attainable by reason of the productive ability of free American labor, industry and agriculture, if supplemented by a system of social security on sound principles.

We pledge our support of the following:

1. Extension of the existing old age insurance and unemployment insurance systems to all employes not already covered.
2. The return of the public employment-office system to the states at the earliest possible time, financed as before Pearl Harbor.
3. A careful study of federal-state programs for maternal and child health, dependent children and assistance to the blind with a view to strengthening these programs.
4. Continuation of these and other programs relating to health and the stimulation by federal aid of state plans to make medical and hospital service available to those in need without disturbing the doctor-patient relationship or socializing medicine.
5. The stimulation of state and local plans to provide decent, low cost housing, properly financed by the Federal Housing Administration, or otherwise, when such housing cannot be supplied or financed by private sources.

REPORT OF DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

Chicago, June 12-16, 1944

The 97th meeting of the American Medical Association in Chicago showed a total registration of 7,284. Annually a distinguished service award is voted by the House of Delegates to an outstanding physician. This year it was awarded to Dr. George Dock of Pasadena, California, distinguished medical educator and well known to many medical men in this region as professor of medicine at the University of Michigan from 1891 to 1908. Dr. Dock's career as a teacher in medicine has been outstanding and the award met with general approval and enthusiasm among the delegates.

The scientific program and exhibit were very interesting. They demonstrated that the war effort has not, in any way, dampened the zeal for scientific advancement among members of the medical profession.

The President, Dr. Paullin, called particular attention to the wartime graduate medical meetings for medical men in the services. The teaching staff consists of thirty consultants and 1,650 teachers who visit Army and Navy hospitals all over the country and give programs of clinics, ward rounds, lectures, demonstrations, round-table discussions and clinical pathological conferences covering the entire field of medicine.

The Postwar Planning Committee has to do with the desires and plans of medical men returning home after the war. It is designed to assist in arranging for postgraduate work and in the location of these physicians when the war is over. An office for this purpose has been set up at the headquarters in Chicago and it should be of great personal assistance to men who want information both on educational opportunities and on locations for practice after the war.

The action of the Government in overruling medical opinion and deciding that premedical students shall no longer be deferred, but are to be inducted into the Armed Forces, presents a serious problem of intern shortage a few years hence. According to Dr. Lahey, we shall have a shortage of 2,000 doctors in 1948 and 1949. In addition, many medical schools may be obliged to close for lack of students.

Dr. Kretschmer made the following statement:

"I believe it is incumbent on every physician in this country to devote at least two hours per day to educating the people in his community as to the significance of the Wagner Bill which would result in the deterioration of medical service, the limitation in the choice of physician and increased taxes."

The report of the Secretary showed that, on April 1, 1944, there were 124,452 members of the American Medical Association of whom 69,304 were Fellows. Income from all sources was larger in 1943 than in any previous year, the net gain being $18,873. Group Life Insurance is provided for all American Medical Association employes and an annuity plan provides annuities for all over sixty-five. Circulation of *The Journal* in 1943 was larger than ever before.

The work of the various councils and bureaus is so extensive that we can merely list them by name:

Pharmacy and Chemistry
Physical Therapy
Foods and Nutrition
Industrial Health
Health Education
Legal Medicine and Legislation
Medical Economics
Investigation
Laboratory
Library
Judicial
Medical Education and Hospitals
Scientific Assembly
Medical Service and Public Relations

The Council on Pharmacy and Chemistry has entered its fortieth year of service. This Council sent out 46,000 copies of its various publications in 1943.

A resolution was presented, but disapproved, providing for a minimum of two delegates to the American Medical Association from all component state societies instead of the present minimum of one.

Another resolution with reference to the extended tuberculosis program of the U. S. Public Health Service (since passed by Congress) expressed the definite feeling of the delegates that all such programs might properly be guided by the Federal Government but that responsibility and power to act should remain with the states.

As to the War Participation Committees requested of the states, only 20 such state committees have been organized of which, however, Minnesota is one.

A questionnaire has been sent out by the Committee on Postwar Medical Service to 3,000 physicians in the Armed Forces and will be sent, no doubt, to all of the 50,000 doctors now serving their country. See *The Journal of the American Medical Association* for June 24, for a full account of the work of this committee.

All members are urged, in fact, to follow all issues of *The Journal of the American Medical Association* closely for details, not only on postwar medical services but on all matters affecting medicine today. In Industrial Health, especially, the American Medical Association is making great strides, and reports on this subject should be carefully read.

Formation of a Speakers' Bureau under sponsorship of the Board of Trustees was directed by the delegates. These speakers are to be available for all regions of the United States and the bureau is to be made up of many men, instead of one, as spokesmen for the American Medical Association.

A resolution was introduced by the California delegation to make Dr. Olin West Secretary-Emeritus for life. This resolution was not approved and at the final session of the House of Delegates, Dr. West was re-elected secretary. A second resolution from the California delegation recommended that the Board of Trustees replace the present editor of *The Journal of the American Medical Association*. It is worthwhile to quote the findings of the Reference Committee on these two resolutions:

"Never before has American medicine been so needful as now of unity. The desire to extend the high quality of medical service to all of the people at a reasonable cost is the objective sought by all of us. Your committee is convinced that this can be attained more certainly if physicians throughout the nation would give their loyalty and support to those selected by this House of Delegates as members of the Board of Trustees and to the representatives selected by the Board itself.

"Your committee commends the loyalty and efficiency with which these officers have for many years served the Association in carrying out the policies established by the House of Delegates. Your committee would also commend the Board of Trustees of the Association for its judgment and wisdom in the management of the affairs of the Association.

"Therefore the Reference Committee on Executive Session recommends that these resolutions be not approved."

The usual plea which has been urged since 1876, was voiced by the delegates once more, for a Department of Health, headed by a member of the cabinet, in which all federal activities on health, except the medical departments of the Army and Navy, could be co-ordinated.

The House of Delegates was addressed at various times by Dr. J. E. Paullin, president; Dr. H. L. Kretschmer, president-elect; Major General Grant, Air Surgeon; Major General Kirk, Surgeon General of the Army; Lieut. General Robert Kho-Sheng-Lim of the Chinese Army; Vice Admiral McIntyre, Surgeon General of the Navy; and Dr. Ruthy, secretary of the Canadian Medical Society.

The final session of the House of Delegates was largely devoted to the election of officers, resulting as follows:

President-elect: Roger I. Lee, Boston, Mass.
Vice-president: Stanley J. Seeger, Texarkana, Texas.
Treasurer: J. J. Moore, Chicago, Ill.
Speaker of the House: H. H. Shoulders, Nashville, Tenn.
Vice-speaker of the House: R. W. Fouts, Omaha, Neb.
New Trustee: Louis H. Bauer, Hempstead, N. Y.
Re-elected Trustee: Elmer L. Henderson, Louisville, Ky.

Dr. A. W. Adson of Rochester, Minnesota, was elected to the Council on Medical Service and Public Relations.

According to the present schedule, the American Medical Association will meet in New York City in 1945; San Francisco in 1946 and Atlantic City in 1947. The year 1947 marks the 100th anniversary of the American Medical Association.

F. J. Savage, M.D.
A. W. Adson, M.D.
E. W. Hansen, M.D.
Delegates to the American Medical Association

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

DIAGNOSTIC SERVICE FOR VETERANS: NEW PLAN

The confusion, red tape and delay that characterized the handling of sick and wounded veterans in the first years following World War I will not be repeated when the disabled men return from this war.

The Veterans' Administration which replaced the organizations of those early days, is now an old and established part of our system of handling fighting men. Nevertheless, even the present extensive facilities will be taxed, and vast new buildings will be required, if all of the diagnostic work, as well as hospitalization, must be done at Veterans' Administration hospitals.

Already, disabled men from World War II are crowding into the hospitals at Fort Snelling and the regional director and medical officer, here, foresee the need of an entire new building devoted to diagnostic services, alone, unless some other method of handling the load is promptly instituted.

Examiners to be Named

Their plan, as an alternative, is to designate practicing physicians throughout the state as Veterans' Administration examiners. These examiners will be asked to assume the responsibility for physical examinations in their offices; also for special diagnostic procedures of all kinds and for periodic check-ups. For this work they will use already available equipment in the veterans' home communities.

Patients will remain at home except when they are found in need of hospitalization. Travel expense, time, lodging and the equipment and staff needed to do the work at the Veterans' Administration Facility will be eliminated and an important part of the medical services needed by thousands of Minnesota veterans will be done by their own doctors or at medical centers near home.

Volunteers Needed

The Council and officers of the association have approved the Veterans' Administration plan and Administration representatives have already approached a number of physicians in the state. They plan to proceed as rapidly as possible in an effort to be certain that examiners are appointed at key points throughout the state. They will welcome volunteers for this service, however, and every physician who is interested and willing to help is urged to write, immediately, to Col. Leo McGuire, Chief Medical Officer, Veterans' Administration, Minneapolis 6.

It should be pointed out that, as in all government services, paper work is involved in these examinations. The smoothness and satisfactory progress of the plan will depend very much upon the promptness and coöperation of the examiners in the matter of paper work, as well as in the careful examination of veteran patients.

Will Prevent Unnecessary Building

On the other hand, good diagnostic service near home will be a boon to patients. It will save a tremendous amount of the taxpayers' money and it will operate to prevent unnecessary piling up of great government medical plants. Once such plants are built, the inevitable tendency, as everybody knows, is to keep them in use even when the purpose for which they are built has been served.

Coöperation of civilian physicians in this work will help to preserve the private practice of medicine, help the veterans and help to limit government facilities to the functions for which they were intended.

HOSPITALS ARE PLANNING, TOO

It is encouraging to physicians that hospital associations are now devoting time and money to a study of the hospital problems which are bound to become acute after the war.

In America, the voluntary hospital has assumed the largest part of the burden and has set the pace for the hospital care of all civilians. In so doing, it has provided a high standard of care to the majority of the people. It is in the nature of its economic basis, however, that even religious and philanthropic organizations have not been able to extend their services fully in sparsely populated regions, just as well-qualified physicians have not been able to establish themselves in regions where they could not expect adequate financial return. In comparison with the great weight of accomplishment achieved by both physicians and hospitals, working together for the vast majority of the people, this would seem to be a minor problem.

This is the Gap

It becomes a major problem, immediate and acute, however, for the reason that this is the gap which may well let in the flood of government medicine and break down the entire system.

The most urgent need of hospital planners, at the present time, is to work out a method, using subsidies from tax funds, if necessary, to fill that gap without opening the way to federalization of all medical and hospital services.

Physicians are working on the problem; but their efforts must be dovetailed closely with hospital planning, since lack of adequate hospital facilities is one major factor in the reluctance of young men to settle for the practice of medicine in remote districts.

Two-Year Study

It is therefore fortunate that the American Hospital Association which is the over-all organization to which voluntary hospitals of all types belong, has already appropriated $15,000 toward a research program looking toward a formula for filling the gap and for improving the hospital program generally. To this grant the Association recently added an appropriation of $35,000. The Commonwealth Fund has added another $35,000, contingent upon securing the balance of the $100,000 from other sources for a two-year study to determine the adequacy of the whole program and the best method of insuring adequate care to all.

Following are the guiding principles established in 1942 by the American Hospital Association:

1. That the voluntary hospitals of the United States which account for more than 60 per cent of all hospital admissions are a national asset of incalculable value.
2. That the efficiency of these institutions is traceable, in large part, to their freedom of action under local control.
3. That the independence of voluntary hospitals and of hospitals under city, county and other local community control should not be jeopardized by federal legislation.
4. That programs seeking to widen the use of voluntary hospitals and their more perfect adaptation to the needs of the workers of the country through voluntary contributory plans, merit government consideration and support.
5. That a full opportunity should be given to voluntary hospitals of the country through the American Hospitals Association to study proposed legislation affecting hospitals before such legislation is offered to Congress.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

J. F. Du Bois, M.D., Secretary

DULUTH WOMAN PLACED ON FIVE-YEAR PROBATION FOR NARCOTIC VIOLATIONS

Re United States of America vs. Edwin H. Whittaker and Dorothy M. Johnson, also known as Mrs. Henry Johnson

On June 12, 1944, Mrs. Dorothy M. Johnson, thirty-nine years of age, 219 W. 5th St., Duluth, was placed on probation for five years in the United States District Court at Minneapolis, following a plea of guilty entered December 8, 1943, by Mrs. Johnson to an indictment charging her and the defendant Whittaker with a conspiracy to violate the Harrison Narcotic Act. Mrs. Johnson was also indicted on two counts of forging narcotic prescriptions. The defendant, Whittaker, a registered pharmacist who operates the Orpheum Pharmacy in Duluth, entered a plea of guilty to the conspiracy indictment on April 1, 1944, and paid a fine of $300.

Both defendants were indicted December 2, 1943, by a Federal Grand Jury following an investigation by the Federal Bureau of Narcotics. The indictment alleged that Mrs. Johnson obtained six prescriptions from three Duluth physicians, five of the prescriptions calling for dilaudid and one prescription calling for morphine sulphate, and that after obtaining the prescriptions, Mrs. Johnson increased the amount for which the prescriptions were written. The indictment charged that this

was done with the knowledge of the defendant Whittaker.

Mrs. Johnson has a previous record in the District Court of St. Louis County where she pleaded guilty on May 7, 1943, to an information charging her with obtaining narcotic drugs under a fictitious name, to-wit: Dorothy Peterson. On May 11, 1943, she was sentenced by the Hon. Mark Nolan, Judge of the District Court, to a term of one year in the Women's Reformatory at Shakopee, the sentence being suspended on condition that the defendant enter Willmar State Hospital for treatment for drug addiction. Mrs. Johnson spent one year at Willmar taking such treatment.

The facts in the case indicate carelessness on the part of certain members of the medical profession at Duluth in writing narcotic prescriptions for Mrs. Johnson. The State Board of Medical Examiners has repeatedly warned the medical profession about the writing of narcotic prescriptions. Under the Harrison Narcotic Law, the various derivatives of opium cannot be dispensed, administered nor prescribed to patients to satisfy their addiction. Narcotic drugs can only be dispensed, administered or prescribed in the bona fide practice of medicine for the relief of an actual ailment of the patient other than drug addiction. For a physician to do otherwise makes the physician also liable to prosecution under the Harrison Narcotic Act.

MINNEAPOLIS WOMAN SENTENCED TO TWO-YEAR TERM FOR CRIMINAL ABORTION

Re State of Minnesota vs. Lillian Kruse Flick

On July 8, 1944, Lillian Kruse Flick, forty years of age, Summit Hotel, Minneapolis, entered a plea of guilty in the District Court of Hennepin County to an information charging her with the crime of abortion. Mrs. Flick also pleaded guilty to having a prior conviction of a felony. She was sentenced by the Hon. Levi M. Hall, Judge of the District Court, to a term of two years in the Women's Reformatory at Shakopee. Mrs. Flick has commenced serving her sentence.

The defendant was arrested June 20, 1944, by Policewomen DeJarlais and Noffke, following the hospitalization of a twenty-six-year-old married woman at Minneapolis General Hospital. The patient was suffering from the after-effects of a criminal abortion and gave a statement naming Mrs. Flick as the one who performed the abortion. The abortion was performed in the room of the defendant at the Summit Hotel. The defendant received $20.00 for the abortion. She first attempted the abortion on April 20, 1944, by using a catheter. The attempt was repeated a week later, and finally, for a third time, on May 25.

The defendant, who has no medical training of any kind, has a previous criminal record under the name of Lillian Kruse, having pleaded guilty in the same Court on November 4, 1938, to a similar charge of abortion. For that crime she served two years in the Women's Reformatory at Shakopee.

MINNEAPOLIS CHIROPRACTOR PLEADS GUILTY TO CRIMINAL ABORTION

Re State of Minnesota vs. Michael J. Koehler

On July 6, 1944, Michael J. Koehler, forty-seven years of age, a licensed chiropractor with offices at 321 Kresge Bldg., Minneapolis, entered a plea of guilty in the District Court of Hennepin County to an information charging him with the crime of abortion. Koehler was sentenced by the Hon. Levi M. Hall, Judge of the District Court, to a term of one year in the Minneapolis Workhouse. Judge Hall gave the defendant until August 7, 1944, to close his office and commence his workhouse sentence. It has also been learned that steps are being taken by the State Board of Chiropractic Examiners requiring the defendant to show cause why his license as a chiropractor should not be revoked.

Koehler was arrested on May 3, 1944, by Detectives Sibbett and Ondrey and Policewomen DeJarlais and Stoltze of the Minneapolis Police Department following the hospitalization of a nineteen-year-old, unmarried girl, who was suffering from the after-effects of a criminal abortion. The girl gave a statement in which she claimed that Koehler allegedly performed a criminal abortion on her on April 29, 1944, by packing the uterus. She also stated that she paid Koehler $150 in cash and that the defendant held her wrist watch as security for another $50.00. The patient's wrist watch was found in the possession of the defendant at the time of his arrest.

The defendant has a previous criminal record, having pleaded guilty on May 24, 1939, in the District Court of Hennepin County, to an information charging him with having in his possession, instruments, articles and medicine for the causing of unlawful abortion. At that time the defendant paid a fine of $150 and was also given a suspended sentence of one year in the Minneapolis Workhouse.

Physicians Licensed July 15, 1944

By Examination June 20, 21, 22, 1944

BRILL, ALICE KATHERINE, U. of Syracuse, M.D. 1942, Minneapolis General Hospital, Minneapolis, Minn.

DAFOE, WILLIAM ALFRED, Harvard U., M.D. 1940, Mayo Clinic, Rochester, Minn.

ESTREM, RALPH LAURITZ, U. of Minn., M.B. 1943, Ancker Hospital, St. Paul, Minn.

FAHEY, MARTIN MATTHEW, Rush Medical College, U. of Chicago, M.D. 1941, Mayo Clinic, Rochester, Minn.

HALLENDORF, LEONARD CHARLES, Oklahoma U., M.D. 1942, Mayo Clinic, Rochester, Minn.

HARDMAN, ANNA BELLA BEATTIE, U. of Toronto, M.D. 1931, Mayo Clinic, Rochester, Minn.

HARDMAN, WILLIAM NELSON, U. of Toronto, M.D. 1931, Mayo Clinic, Rochester, Minn.

HART, GEORGE MARCY, Northwestern U., M.B. 1943; M.D. 1944, Mayo Clinic, Rochester, Minn.

JOYCE, GEORGE THOMAS, U. of Minn., M.B. 1943, Ancker Hospital, St. Paul, Minn.

MCANALLY, ALBERT KEY, Rush Medical College, U. of Chicago, M.D. 1941, Mayo Clinic, Rochester, Minn.

NEURU, ELWIN NATHAN, Stanford U., M.D. 1943, Mayo Clinic, Rochester, Minn.

OCKULY, ORVILLE ELMER, St. Louis U., M.D. 1942, Mayo Clinic, Rochester, Minn.

ROAN, ORVILLE MORTON, U. of Minn., M.B. 1943, 3401 16th Ave. S., Minneapolis, Minn.

SCHLESSELMAN, EDMOND A., U. of Minn., M.B. 1943; M.D. 1943, 407 N. Sixth St., Mankato, Minn.

SCHULTZ, J. HAROLD, U. of Illinois, M.D. 1943, 3418 Dupont Ave. N., Minneapolis 12, Minn.

SNYDER, CLIFFORD DALE, U. of Minn., M.B. 1943; M.D. 1943, Box 291, Elmore, Minn.

WHITTAKER, FRANCIS MARION, U. of Minn., M.B. 1942, 705 Wash. Ave. S. E., Minneapolis, Minn.

WILMER, HARRY ARON, U. of Minn., M.B. 1940; M.D. 1941, 96 Bedford St. S. E., Minneapolis, Minn.

WOLF, ALFRED HENRY, Hahnemann, Philadelphia, M.D. 1943, St. Mary's Hospital, Minneapolis, Minn.

By National Board Credentials

SMALL, JOHN THOMAS, McGill U., M.D. 1940, 1025 Harlem Blvd., Rockford, Ill.

By Reciprocity

ENGLUND, DEWITT WALTER, U. of Minn., M.B., 1940; M.D. 9141, 2196 Dowell Ave., St. Paul, Minn.

Minneapolis Surgical Society

Meeting of April 6, 1944

The Vice President, Daniel MacDonald, M.D., in the Chair

Secretary John M. Feeney, M.D.

RESECTION OF PANCREAS FOR HYPERINSULINISM

Abstract of Case Report

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K. M., aged twenty-four, a discharged soldier wounded twice in the South Pacific, experienced his first symptoms when he became unconscious on sentry duty. He was evacuated and experienced several more unconscious attacks during the process of evacuation. He was discharged from the army as an epileptic for want of a better diagnosis.

During his stay in the hospital the patient was hard to arouse in the morning, exhibited lethargy, drowsiness, irritability and was uncoöperative and difficult to manage. He had a persistent low blood sugar and went into coma or stupor whenever the level fell below 45 mg. per cent.

On one occasion he was brought to the hospital in coma with a blood sugar of 28 mg. per cent but regained consciousness immediately following the intravenous injection of glucose.

Thorough study revealed the patient to be a hypoglycemic and typical of hyperinsulinism, the result of islet tumors of the pancreas.

On February 28, 1944, the patient was operated upon with a preoperative diagnosis of islet tumors of the pancreas. The tail and body of the pancreas were removed to the superior mesenteric vessels. The specimen weighed 46 grams and on pathologic examination was found to contain eight islet tumors.

The patient made a completely uneventful recovery and his blood sugar is now stabilized between 99-102 mg. per cent. He has had a complete change in personality, has had no more attacks of coma and has had a gradual and progressive return of weight and strength.

Discussion

Dr. Orwood J. Campbell: I was very much interested in Dr. Maxeiner's report and congratulate him on the splendid results which he obtained.

A few years ago I reported an experience with a case of hypoglycemia from an island tumor to the Minnesota Pathological Society. I do not believe that I reported it to this group.

My patient was a somewhat older man who had had increasingly severe attacks of convulsions and coma with marked personality changes which lead his local doctors to believe that he was a psychopath and needed to be committed to an institution. He had been sent to Minneapolis for this purpose to consult Dr. Hewitt Hannah. The patient was in deep coma when he arrived, in fact his attendants thought he was dying. The immediate and thereafter constant response to intravenous glucose led to the establishment of the correct diagnosis, namely hyperinsulinism.

On operation a single tumor was found in the mid part of the pancreas. This was easily visible and palpable when the pancreas was exposed. We removed the tumor only. The patient made an uneventful convalescence and has remained well.

An interesting feature of his convalescence was the fact that for a period of approximately twelve days he drained clear inactive pancreatic secretion which produced no irritation at all and which suddenly became activated and started to produce digestion of the skin and the margin of the sinus. Fortunately the sinus closed shortly thereafter.

I was also interested in Dr. Maxeiner's reference to Brunswig's advice that in a case of hypoglycemia without palpable or demonstrable island tumor it is advisable to resect the body and tail of the pancreas. This advice is in direct contradiction of the majority opinion as expressed in the literature. The advice has been repeatedly given that it is inadvisable to resect the pancreas unless one can definitely prove the presence of an island tumor.

In one case in which I did resect the pancreas under such conditions the patient obtained no benefit from the procedure whatsoever and continued to show hypoglycemia.

It has been recommended that in the event no tumor can be demonstrated on exploring the pancreas it would be better to close the patient and re-explore at a later date in the hope that the tumor will by that time have become demonstrable.

It is well to remember that all cases of hypoglycemia are not cases of hyperinsulinism. Many very severe types of typoglycemia are due to liver nisufficiency and there are undoubtedly other types of poorly-understood abnormalities of carbohydrate metabolism.

Doctor Maxeiner's case is unusual in the number of definite tumors which were present. While multiple tumors are reported I don't recall any cases in which so many were found.

It should be possible to recognize the condition of hyperinsulinism if the clinician is alert to the symptomatology. Yet pathologists frequently report the presence of undetected island tumors which have caused the death of the patient. Island tumors undoubtedly exist without producing symptoms. The results obtained by the extirpation of the offending tumor or tumors is dramatic and gratifying to the extreme.

Note.—In view of the fact that a complete report of this case together with the literature on islet tumors will be published later, this brief only is submitted for immediate publication.

CONTINUOUS SPINAL ANESTHESIA

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I offer this paper with a certain feeling of apology. I have no illusions about my being one versed in the art of anesthesia. However, I have two reasons for presenting it. In the first place, I should like to express the satisfaction and the feeling of safety that this type of anesthesia has given me after many years of experience with the one dose of spinal anesthesia and, secondly, to demonstrate the method of introducing the soft malleable German silver needle that I have been using. This has made easier for me the only really difficult part of the procedure.

Since January, 1930, when I first joined the surgical service of the Veterans Hospital and including the last four months since I left it, spinal anesthesia was used on 8,140 occasions. To a certain extent we were forced to spinal anesthesia. For, strangely enough, the Veterans Administration which, prior to the war, was probably the largest medical organization in the world, hires no trained anesthetists. General anesthesias are usually given by the younger physicians coming into the service, most of whom had no interest in anesthesia, and who rarely were trained in the use of the modern gas machine. For that reason we used spinal or local anesthesia wherever possible, and we tried to finish under the type of anesthesia with which we started. In this regard, I might say, in passing, how often I have been amazed by the relaxation that can be obtained and the comfort that can be given to a patient by the use of local and splanchnic novocaine as an adjunct to a waning spinal anesthesia, when injected sub-peritoneally, intramuscularly, and into the splanchnic area, by the method of Farr and Maxeiner. Large wheals of novocaine placed into the gastro-hepatic and other mesenteries gravitate back into and anesthetize the splanchnic plexus. This has often been most helpful and has pulled us out of what otherwise would have been a tight hole.

This experience has brought us to like the wonderful relaxation and exposure that spinal anesthesia affords. We also learned to respect its dangers. It afforded us an opportunity of evaluating the various agents and methods used in spinal anesthesia.

I think that it is generally conceded that novocaine is the least toxic of the drugs used for this purpose. However, except for short operations and in small doses, it is not a satisfactory anesthetic. When given in the larger doses and when used for high anesthesia, it is usually accompanied by a marked drop in blood pressure that can be both distressing and dangerous.

With the event of the longer-acting anesthetic drugs, metycaine and pontocaine, we felt that our troubles were over. However, we quickly discarded metycaine after an unpleasant experience where we had a bladder paralysis that lasted all too long. Our experience with pontocaine has been on the whole generally good. We felt that there was less blood pressure drop with it than when we used novocaine. However, it was rare that we could finish a gastric resection with it alone, without loss of relaxation and without discomfort to the patient.

In 1939, Lemmon reported 100 cases of what he calls by various names—continuous, serial, fractional, controllable, intermittent spinal anesthesia. I recently had a personal communication from him in which he states that he has now used it in over 4000 cases. Since June of 1943, we have used this method in 105 cases and, for the most part, have been well pleased with it. We have limited its use to what we expected would be a long or difficult case, or to the poor-risk patient where we felt spinal anesthesia would be more suitable than inhalation or intravenous anesthesia. For these cases we have come to feel that this is the answer. When using the usual one-dose spinal anesthetic in this type of case the surgeon is usually up against the dilemma of giving either too heavy a dose with the consequent danger of blood pressure drop or toxic effects on the cord and nerves, or of giving too light a dose that will probably be too short acting, forcing him to resort to a general anesthetic at a time when the patient's reflexes are being stimulated from the site of operation, often resulting in a stormy induction.

Lemmon claims several advantages for continuous spinal and in the main we have found them to be true.

1. When using it, a dose can be given just sufficient to attain the exact level and degree of anesthesia desired.

2. By adding subsequent small doses, anesthesia can be continued as long as necessary. This overcomes one of the real shortcomings of spinal anesthesia. There is no doubt that the trend in surgery is away from speed. Surgeons no longer talk with pride about the speed with which they were able to complete a large operation. With the supportive measures that we now have at our disposal, glucose, plasma and blood, and with better preparation of the patient, we can afford to take the time necessary to do careful surgery. Therefore, an anesthetic which will last as long as we need it is quite essential. This places spinal anesthesia in the same category as inhalation and intravenous anesthesia in this respect.

3. It is generally conceded that the first thirty minutes is the danger period for spinal anesthesia. After an initial blood pressure drop, the regulatory mechanism of the vascular system becomes compensated and the danger of further drops in pressure from subsequent doses is very little unless the patient is going into true shock. Therefore, the small initial dose that continuous spinal makes possible minimizes the danger from the primary blood pressure drop and adds a real factor of safety that one cannot get with the one-dose method when it is given in a quantity necessary to get prolonged relaxation.

4. The smaller initial dose minimizes the danger of toxic effects from absorption of the drug into the systemic circulation in patients unusually sensitive to the drug.

5. Continuous spinal offers another factor of safety that few thought was possible. Most of us felt that after a spinal was given there was no way of get-

ting it out again. In this, however, having the malleable needle continually in the spinal canal, should any symptoms of toxicity or respiratory paralysis develop, it is possible to withdraw the majority of the offending solution. Aspiration of 10 to 15 c.c. of spinal fluid will remove most of the novocaine as the greatest concentration is in the neighborhood of the needle. We have not had to do this as yet but, according to Lemmon, when this is done the nerves will recover their function in about five minutes.

The contraindications to continuous spinal anesthesia are the same as for the one-dose method. However, when we have a patient who is a bad risk for any type of anesthesia, and in whom it is felt that spinal would be safer than a general anesthetic, it may be possible by using very small repeated doses of continuous spinal, to get by without too much shock and blood pressure drop. I will briefly review the accepted contraindications.

1. Diseases of the central nervous system. This, not only because the anesthetic may diminish resistance to the disease, but also because any new symptoms that may arise or any increase in the severity of the disease thereafter, might be attributed by the patient to the anesthetic.

2. Patients who have a fixed aversion to spinal anesthesia should not have it forced upon them.

3. Severe anemia or hemorrhage.

4. Shock or hypotension.

5. Cardiac decompensation is a contraindication to high spinal though not necessarily to low.

6. Patients with coronary disease present a rather serious risk for a sudden drop in blood pressure may change a coronary circulation from one that is barely sufficient to one that is decidedly insufficient.

Finally, one should never give a spinal without having a competent anesthetist at the patient's head, constantly on the alert for any deviation from normal in blood pressure, pulse, respirations and particularly color.

We have followed Lemmon's advice in regard to the drug to use and have limited ourselves to novocaine exclusively. We have felt that inasmuch as this is the least toxic of the drugs used and, if we could repeat and add to it as necessary, that there is no particular advantage in using a longer acting and, *ipso facto*, a more toxic drug. There is, however, no objection to using any of the drugs generally used for spinal anesthesia. They will be safer in continuous spinal than when used as a single dose. The amount of the drug necessary will depend on the individual tolerance of the drug and on the length of the operation. Lemmon cited a case of a woman on whom he had operated twice. On one occasion it was necessary to use 1800 milligrams and on the other 2200 milligrams of novocaine to get a satisfactory anesthesia. From this he concludes that this indicates an individual tolerance and concludes that the dose in any given case is *enough*.

The height of the anesthesia can be regulated by the position of the patient, the volumetric dilution of the anesthetic agent-barbatage, the rate of injection and the total dosage of the drug.

TABLE I. CASES IN WHICH CONTINUOUS SPINAL WAS USED

Cholecystectomy	32
Gastric Resection	28
Appendectomy	18
Abdominal Exploration	9
Nephrectomy	3
Abdomino-perineal Resection	3
Perforated Ulcer Repair	3
Entero-anastomosis	2
Ileostomy	2
Herniotomy	2
Resection Carcinoma Sigmoid	2
Resection Carcinoma Caecum	1
Resection Diverticulum Sigmoid	1
Intestinal Obstruction	1
Separation Adhesions	1
Prostatectomy	1
Resection of Pancreas	1
Exploration Common Duct Stone	1
Cholecyst-jejunostomy	1
Foreign Body of Abdomen	1
Total	105

Lemmon states that when using continuous spinal that he rarely has to resort to vaso-constrictor drugs beyond the usual dose of ephedrin given before the spinal anesthesia is started. He states that because of the small doses given, and by using intravenous glucose and, when necessary, blood, that vaso-constrictors are rarely necessary. While we have found that we do not need them by any means as often as with the one-dose spinal, we keep a very close watch on the blood pressure and do not hesitate to use them as often as there is the slightest need for them. In this way we try to prevent any marked fall in blood pressure with its resultant dangers of anoxia to the heart muscle and to the brain. In our experience, neo-synephrin given in 0.25 c.c. or 2.5 mg. doses will usually quickly restore a blood pressure that has dropped. This may be repeated as often as necessary.

The only real difficulty in continuous spinal is the introduction of the soft flexible German silver needle. Most authors whom I have read, recommend the use of a Sise introducer to puncture the skin and the interspinous ligament. This then is removed and the soft needle is put through the tract that this leaves. I have been using a different technique. Instead of pulling the introducer out I leave it in and make the spinal puncture through the introducer. After spinal fluid is obtained, the introducer is withdrawn from the skin or at least into the subcutaneous fat where it is left to stay hanging around the spinal needle. This withdrawal is a very essential step. One dare not leave the introducer in its original position in the interspinous ligament. Any motion of the patient could easily shear off the soft needle as it emerged through the end of the introducer.

This technique that I have described has three advantages: In the first place, it makes it definitely easier to introduce the needle. One does not have to hunt for the tract that the introducer has left through the in-

terspinous ligament. Secondly, with this method the spinal needle never touches the skin—a definite aid in asepsis. Thirdly, when the puncture is done in this manner, one can use a smaller needle. We now use a No. 19, 4-inch needle whereas before it was necessary to use a No. 18 needle. The smaller needle makes a smaller puncture hole in the dura and as a result, there is less danger of post-spinal headache from leakage of spinal fluid.

In closing, I would say that I feel that continuous spinal anesthesia equipment should be more generally available and should be used in cases where it is indicated.

Discussion

DR. A. WM. FRIEND, Hartford, Connecticut: Doctor Culligan has presented this subject of continuous spinal anesthesia so thoroughly that there is little left to say. He has presented it remarkably well and I am quite in accord with all of his remarks.

I notice that he has been using a 5 per cent solution of novocain.

We have been working with a 1 per cent solution as advocated by Fraser and have been able to get very satisfactory sensory anesthesia without profound motor paralysis particularly of the intercostals; there has been less drop in blood pressure and less of the toxic signs that we see with continuous spinal anesthesia using the 3, 4, and 5 per cent solutions.

I notice Doctor Culligan has been using an introducer, which is very helpful in making the puncture. The Sise introducer which he demonstrated to us cannot be removed from the needle after the needle has been introduced.

The Moore introducer which is more like a grooved director can be removed so that it isn't left hanging on the needle after it has been removed from the interspinous space.

Those of us who are working with continuous spinals all the time know about the special mattress which we have to use. It is a rather thick, heavy and somewhat cumbersome thing to carry around. To get away from that we have been using a continuous caudal needle as suggested to us by Bishop. It has a shorter hub, as you know, and can be introduced more nearly flush with the skin. The continuous caudal needles come in different lengths and one can choose the most suitable length. In that way, by using a couple of folded sheets under the patient's back, we can do away with the special mattress.

DR. RALPH T. KNIGHT: This has been a very splendid description of continuous spinal anesthesia. Doctor Culligan need never apologize for speaking upon the subject of anesthesia. Whose impressions and experiences with anesthesia should be more helpful than those of a surgeon? I believe that surgeons should do more writing upon this subject.

We have not used as many continuous spinal anesthesias as Dr. Culligan has. Our number is about fifty. We have tried various agents and have ended up by using pontocaine diluted with dextrose and spinal fluid according to the technique of Hand and Nicholson at the Lehey Clinic. We found that we were able to make the anesthesia run more evenly and more smoothly with this agent than with others.

We have used no continuous spinal anesthesia for nearly two years, for various reasons. The heavy mattress was inconvenient. Some of our surgeons complained about it. In much of our biliary tract surgery an x-ray casette is routinely placed under the patient. This interferes with the continuous spinal technique. Occasionally we had something go wrong technically with the needle, tubing or connections which prevented our repeating injections when desired. Because of these inconveniences we finally started using longer-lasting anesthetics. We adopted nupercaine for all of our longer cases and have used this for the last two years with good satisfaction. This produces spinal anesthesia lasting three and a quarter to three and a half hours.

There are several ways of avoiding the use of the thick-slotted mattress in continuous spinal anesthesia. Dr. Friend mentioned the use of folded sheets. I have found this method very acceptable in some cases. Someone has suggested that it is only necessary to place a pile of three or four folded sheets under the lower ribs and to allow the buttocks to rest upon the table, taking advantage of the lumbar lordosis. I believe it is a little better to place at least a couple of folded sheets under the buttocks also. This will prevent the spinous processes from pinching the spinal needle. Another method is to use an inverted dome with a slot in one side for the exit of the bent needle or tubing. This resembles an observatory dome turned upside down. The patient's back rests upon it and is thus held up off the table.

One other point that might be interesting to consider is how one is to know when more anesthetic is needed. Several ways of determining this have been advocated. First, before the patient is aware of any discomfort, he is likely to become a little more alert and active mentally, as if some stimuli were filtering through from the anesthetized area without the patient really becoming aware of them. Second, a very obvious sign, of course, is discomfort on the part of the patient. Third, another very obvious sign is diminishing relaxation as noted by the surgeon. Fourth, a sign which has been especially helpful to me is the descent of the area of movement in respiration. In order to produce a good relaxation of the abdominal muscles, the lower intercostal nerves must be anesthetized because these nerves supply the abdominal wall. I have found it helpful to slip my hand from time to time down along the side of the chest wall and note the lowest rib that is moving during respiration. This should be the sixth rib. When the next rib below this partakes in the movement it is time to add more anesthetic.

In writing about continuous spinal anesthesia, some have suggested that a certain amount of solution should be injected at certain time intervals. I believe this method should be avoided. Anesthesia is always an individual matter and does not run by the clock.

The fixation of the anesthetic in the nerve tissue is something that has always been talked of. The technique of continuous spinal anesthesia has been very revealing in this respect. The anesthetic never becomes fixed in the nerve tissue. It simply exists in the nerve tissue at the same partial pressure as it exists in the surrounding spinal fluid. When part of it is removed from the spinal fluid it is very quickly removed from the nerve tissue as well. Repeatedly spinal anesthesia has been abruptly terminated by withdrawing spinal fluid. I remember that on one occasion the valve in our connecting tubing became incompetent. The patient suddenly began to complain. I noticed that the syringe had about 10 c.c. more fluid in it than it had had before. All I did was to push this fluid back again into the dural canal and immediately anesthesia was renewed. It is well for us all to remember that the spinal anesthetic does not become fixed in the nerve tissue. It remains there only as it exists in the spinal fluid. If the solution remains to any extent heavier or lighter than the spinal fluid, it may run down or up the spinal canal for quite a long period of time, and anesthesia only remains as long as there is a sufficient concentration of the anesthetic in the spinal fluid.

DR. O. J. CAMPBELL: I should like to ask Doctor Cul-

ligan whether he varies the site of the puncture according to the height of anesthesia desired.

DR. ROBERT F. MCGANDY: I should like to know what Doctor Culligan means by "high anesthesia."

DR. L. C. CULLIGAN (closing): By a "high anesthesia" we mean one that is adequate for upper abdominal surgery. As yet we have not used continuous spinal for chest surgery. Lemmon has used it a number of times. I should think that Doctor Friend's suggestion of using a more dilute solution would be a very good idea for getting a higher anesthesia safely. We might be one to interest Doctor Kinsella in using spinal anesthesia for some of his chest surgery.

In regard to the height of the spinal puncture, we usually go between the second and third lumbar vertebrae. For a high anesthesia we often go between first and second. This, however, must be done carefully to avoid injury to the cord.

Regarding the incidence of headaches, I can't say that we have noticed any difference. We have not found that headaches are a serious complication. Only occasionally have we had a headache that would last two weeks. We have had no more headaches with continuous spinal than with one-dose spinal.

In answer to the question of whether novocaine becomes ineffective after prolonged and repeated use, I would say that we have not found this to be the case. The longest operation we have used it for was a gastric resection in a difficult case that lasted six hours. Continuous anesthesia alone was used for about five hours, at which time the patient became restless and we terminated with intravenous sodium pentothal.

As to how to determine when to add more, I might say that it has been a little problem with us. We usually waited until the patient showed signs of pain. Some patients need it sooner than others. The usual tim is 25 to 30 minutes before the patient will start showing signs of pain. It takes about one and one-half minutes to give him relief after more novocaine is injected. Doctor Knight's method of feeling the intercostal muscles and noticing the return of muscular action demonstrates the art of anesthesia and is one of those little points which only the well-trained, competent anesthetist would think of noticing.

THE USE OF CURARE IN ANESTHESIA

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As has happened so many times in medicine, a plant which has been known principally in folklore has at last come into a very promising clinical use. One of the interesting things which white men found in exploring South America was the fact, that Indians made some sort of a concoction out of a weed, plastered it upon their spear heads, and were thereby able to make their spears much more effective against game animals and against their tribal enemies. Curare has been used in the physiological laboratories for a great many years as an agent which paralyzes muscle. Its action is at the myo-neural junction. So far as has yet been found, it has no other effect upon the nervous system. It has not been until recently that the drug has been sufficiently purified so that this action is unaccompanied by a few other toxic effects. Squibb and Company has made such a preparation and has marketed it under the name of Intocostrin. Taking advantage of this purified product, A. E. Bennett used it in the prevention of sprains and fractures which sometimes accompany convulsive shock therapy in psychiatry. He reported this in January, 1940. One year later, in January, 1941, Gray, Spradling and Fechner made a similar report upon the use of curare in modifying metrazol therapy.

With these reports in mind, Dr. Harold R. Griffith, an anesthetist of Montreal, sought to produce better muscular relaxation with lighter general anesthesia by using curare as an adjuvant. His first report was made in July, 1942. He made a second report at the Canadian Medical Association in 1943. Meantime, Dr. Stuart C. Cullen at the University of Iowa had had the same idea ahead of Griffith and had done some work on animals, but was somewhat disappointed and had temporarily abandoned his investigation. After Griffith's first report he set to work in earnest and was able to report a large series of cases in the August, 1943, number of *Surgery*.

We started the use of curare as an adjuvant to general anesthesia at the University of Minnesota Hospitals in May, 1943, and have used it in about 250 cases at the University Hospitals and other hospitals in the Twin Cities.

Like all drugs which anesthetists use, curare has a progressive effect upon different parts of the organism. One group of muscles after another is affected. The muscles of the throat are affected among the earliest, so that the swallowing reflex is impaired. The conscious animal becomes unable to swallow saliva. It tends to run into the larynx and trachea. The animal then becomes unable to cough and thus extrude this foreign material. Muscles of the extremities then become weakened and paralyzed so that the animal is unable to walk and falls down. The muscles of the trunk then lose their tone. Costal breathing becomes impossible, and the abdominal muscles become flaccid. The last effect is then upon the diaphragm, and when this becomes paralyzed respiration of course ceases and death ensues. Each one of these effects takes place in progression as the dose is increased until it reaches the lethal dose.

These same effects take place in man as a patient. When general anesthesia is very light and reflexes of the pharynx and larynx are in evidence with a tendency to pharyngeal and laryngeal spasm and partial respiratory obstruction, one of the first results of curare noticed is the release of this spasm. Curare then becomes a cure for one of the greatest nuisances, and even dangers, in anesthesia. Laryngeal spasm has always been one of the greatest banes of the anesthetist. I believe the time will come when no anesthesia will be started without curare at hand, even if it is for this purpose alone.

The next very evident effect is the relaxation of the abdominal muscles. This relaxation compares very favorably with the relaxation obtained by spinal anesthesia. The abdominal muscles of course are in the same group with the intercostal muscles, being sup-

plied by the same nerves and therefore being susceptible to the same dosage of any general anesthesia, and now susceptible to the same dose of curare. Most surgeons realize with their anesthetists that when complete abdominal relaxation is obtained the intercostal muscles are at the same time paralyzed, so that breathing is then carried on by the diaphragm alone. When now we use curare we must realize that the same thing takes place. Intercostal muscles cease to move when the abdomen is well relaxed. The next step in dosage also paralyzes the diaphragm, and respiration ceases. The dose must be planned and administered so that this last does not happen. However, if the dose should be miscalculated, the patient is well cared for by hand compression of the breathing bag to produce each inspiration. I believe that curare should never be given unless the anesthetist knows that the mask can be fitted perfectly and the jaw and tongue can be well supported, so that this type of artificial respiration can easily be carried on. The alternative of this is the use of an intratracheal tube. One feels perfectly assured of his ability to carry the patient through this event if he has good means of artificial respiration for a period of five to ten minutes. Prostigmine is the drug antidote. We have never even had this drug at hand. We have caused respiratory arrest in three cases. Inasmuch as we quite habitually administer anesthesia by this type of controlled respiration whenever we wish an exceedingly quiet abdomen, the possibility of respiratory arrest by curare has held no fears for us.

The average dose ranges from 60 milligrams to 100 milligrams, according to the size and vigor of the patient and the depth of anesthesia when the curare is administered. It is administered intravenously. The full effect takes place in from forty to sixty seconds. In the beginning of our use of curare, we tried to estimate the dose needed and then to give the whole amount at once. It was in the early cases that we had the three arrests of respiration. It is now our custom to start with no more than 60 milligrams, and in the case of rather frail patients 40 milligrams, then to wait with the needle in the vein for at least one full minute, and if the relaxation does not appear to be sufficeint we add about 20 milligrams at a time until relaxation is complete. A convenient technique is to inject it into an already set-up intravenous drip tubing close to the needle. General anesthesia may be very light so that when the peritoneum is opened the abdominal contents are actually extruded. When curare is administered at this time, it is quite dramatic to see the viscera recede within the peritoneum.

The action of the drug is of rather short duration, and another dose must be administered in from twenty minutes to an hour and a half. The clever anesthetist is able to keep the general anesthesia very light so as to actually have need for additional curare. It is rather easy to allow the administration of the general anesthetic to proceed so that sufficient relaxation is maintained without more curare. This is what we should avoid. The patient recovers from curare without the slightest depression. Our object is to avoid the depressing effect of deep general anesthesia. Although the duration of the curare effect is usually as stated above from twenty to ninety minutes, it should never be repeated according to lapse of time but only as the signs of receding effect appear. Then the second and ensuing doses should be smaller than the first.

The use of this drug will probably greatly alter one of our most popular concepts of anesthesia. It was preached by Creil and many others that the patient was protected from shock by deep anesthesia, which prevented stimuli from reaching the spinal cord and brain from the periphery and thus protected the central nervous system against heavy bombardment. Now that we are able to produce complete relaxation with the patient only very lightly anesthetized, we find that recovery is more uneventful and more immediately complete and that shock is prevented to a greater degree. This helps us to realize that deep general anesthesia is more damaging and more shock-producing than even the trauma of surgery.

Spinal anesthesia has been, and still is, one of our best forms of anesthesia, for the reason that it produces insensibility to pain and utter relaxation without effect upon the inner portions of the spinal cord or upon the brain. It seems that curare bids fair to replace not only a great deal of deep ether anesthesia but a great deal of spinal anesthesia as well.

References

1. Bennett, A. E.: Preventing traumatic complications in convulsive shock therapy by curare, J.A.M.A., 114:322-324, (Jan. 27) 1940.
2. Gray, R. W.; Spradling, F. L., and Fechner, A. H.: The use of curare in modifying metrazol therapy. Psych. Quart., 15:159-162, (Jan.) 1941.
3. Griffith, H. R. and Johnson, G. E.: The use of curare in general anesthesia. Anesthesiology, 3, 418-421, (July) 1942.
4. Griffith, H. R.: The clinical use of curare. Read at Canadian Medical Association meeting, Section on Anesthesia, (April) 1943.
5. Cullen, S. C.: The use of curare for the improvement of abdominal muscle relaxation during inhalation anesthesia. Surgery, 14:261-266, (Aug.) 1943.

Discussion

DR. J. W. BAIRD: New drugs, new methods and new techniques are being introduced into the field of anesthesia as in other branches of medicine. These new developments have often proved to be of a distinct advantage to the patient, the surgeon and anesthetist.

The introduction of curare into the field of anesthesia has been the latest and perhaps the most spectacular development. Curare has proved to be an excellent skeletal muscle-relaxing agent.

This profound anesthesia was often of a distinct disadvantage to the patient. The recovery time was prolonged, nausea and vomiting were more common, and the degree of postoperative depression was much greater. We have known for some time that 15 minutes of deep anesthesia is comparable to 2 hours of light anesthesia so far as the production of shock and depression of physiological mechanisms is concerned. From this one can see the distinct advantage of light anesthesia.

Curare has made a light plane of anesthesia effective. We now rely upon curare to produce the muscular relaxation needed rather than a deep plane of anesthesia.

We have been impressed with the postoperative course of the patient following curare. The course of these patients has been very satisfactory. Postoperative shock and depression have been minimized, fewer

postoperative complications have arisen, and their course as a whole has been more satisfactory than in cases where deep anesthesia was used. This is due to the fact that relaxation has been adequate and there has been less trauma of tissue which usually accompanies poor relaxation. The minimal amounts of general anesthetic agent administered has also been an important factor in the improved postoperative course of the patient.

Aside from the excellent muscular relaxation which we are obtaining with curare, we have been impressed with the satisfactory postoperative course of the patient who has received this drug. Several surgeons have remarked, "I don't know whether curare had anything to do with the progress of the patient or not, but his postoperative course has been better than any I have had for some time." I believe that curare plays an important part in this satisfactory progress. Let us analyze the facts, and I believe we can show that this drug has been largely responsible for the satisfactory course of the patient.

Doctor Knight has said, "Deep anesthesia is more shock-producing than surgical trauma." It has been shown that fifteen minutes of deep anesthesia is as shock-producing as two hours of light anesthesia. We also see more postoperative nausea and vomiting in patients who have been subjected to deep anesthesia. This nausea and vomiting alters the fluid balance in the body and thus interferes with other physiological mechanisms.

Before the introduction of curare into the field of anesthesia we were forced to resort to deep stages of anesthesia to obtain the muscular relaxation needed for good operative conditions. At the present time we anesthetize the patient lightly with cyclopropane and rely upon curare to produce muscular relaxation.

This combination, in our opinion, has been largely responsible for the excellent postoperative course of the patient. The surgeon has excellent relaxation which minimizes surgical trauma and shock. Shock is further minimized by using light anesthesia.

We have seen no untoward conditions following the use of curare. It apparently is not shock-producing, and we have experienced very little change in blood pressure and cardiac rate. As a whole, the combination of light inhalation anesthesia and curare has proven highly satisfactory.

DR. R. C. WEBB: I should like to congratulate Doctor Knight on this excellent paper on the use of curare and at the same time state that I have found that the curare was very helpful to me when administered during operation by Doctor Knight or by his associate, Doctor Baird.

During the first three months of this year I have had curare administered in twelve abdominal operations. Six of these have been operations on the gallbladder, and two have been postoperative ventral hernias. In the postoperative ventral hernias in each case I had had the thigh prepared for the use of fascial transplants, but when I had dissected the abdominal wound and prepared for closure, curare was injected and the wound edges came together so easily that it was possible to overlap them and suture them with the greatest ease. Consequently I omitted the use of the fascia. Both cases healed firmly and satisfactorily, and I am sure that the curare was exceedingly helpful.

In the gall-bladder operations I was particularly impressed with the relaxation produced by the curare making the technical procedure as satisfactory as is the case with an ideal spinal anesthesia. The postoperative course in the gall-bladder cases was fully as satisfactory as in the ideal spinal anesthesia patients and I thought that perhaps the patients were somewhat better off because of the fact that they had not been awake during operation. The thought has also occurred to me that in many selected cases the use of curare with gas anesthesia will replace much of the spinal anesthesia now being used. It is my feeling that Doctor Knight and Doctor Baird are making a real contribution in this community by teaching us the use and advantages of curare in selected cases.

DR. MARTIN NORDLAND: I have enjoyed Doctor Knight's and Doctor Baird's discussion tonight. Doctor Knight has administered curare to several of my patients in the past few months. I realized the value of curare in several desperate cases. It proved to be of particular value in two acute gall bladders and two massive incisional hernias. In the hernia cases preparation for fascial stripping from the thigh had been made. With the administration of the curare the abdomen was so relaxed that it was possible to easily overlap the fascial margins and the fascial stripping was unnecessary. In the deep abdomen with diseased gall bladder the reaction to curare is ideal for careful and cautious dissection. With proper supervision, I am confident that it is a good anesthetic. Until its limitations are better known, however, I believe it should only be administered by expert anesthetists.

DR. O. J. CAMPBELL: I should like to ask Doctor Knight if there is any limit to the amount of intercostrin that can be used over a long period.

DR. IVAR SIVERTSEN: After all, this drug that is being employed is the so-called Indian arrow poison of South America. I think we should be careful about letting the average nurse give this drug unless she has been trained in the use of the drug.

I should like to know the amount of drug that can be used in any one case.

DR. S. R. MAXEINER: When I started with Doctor Farr thirty-four years ago in the days of poorer anesthesia we frequently experienced blue patients, a patient either too widely awake or a patient too profoundly asleep, and as a result there were many unpleasant experiences. These experiences led us to the more extensive use of local and spinal.

In recent years the standards of anesthesia have improved so greatly that I feel we should compliment Doctor Knight and the others who, through their teachings are responsible for these marked improvements.

DR. IVAR SIVERTSEN: It works marvelously in the hands of these trained anesthetists, but I think no anesthetist should be allowed to give this drug until he has been trained in its use.

DR. RALPH T. KNIGHT (closing): Doctor Sivertsen made the remark that this is a poison. That is certainly true. Every drug that the anesthetist uses is a highly potent poison. They are used to their physiological limits, and they should be used with training and with caution. Nobody opens an abdomen without training and without caution and certainly lethal drugs should be used only with training and with caution. This is a city in which there has been only one physician specializing in anesthesia until three months ago, and now there are two. Anesthesia has to be given by those who are available. I think the nurse anesthetists are doing a good job. Most of them feel very cautious, very humble, and very anxious to give very conscientious care to their patients. I think we have as high a grade of nurse anesthetists here as anywhere. I am not in a position to say that they mustn't use such a drug as this. They are learning to use it. We are trying to instill great caution in their use of it.

The largest amount of this drug ever given to any patient by me was 360 mg. (18 c.c.) That was for a gastric resection. I was caught just a little bit unaware of what it would take to complete this case. Bieter, Professor of Pharmacology at the University, says a

physiological dose of purified curare can be repeated every 20 minutes. Most of the doses have lasted much longer than that.

I believe the total dose is not very important. The important point regarding the size of the individual dose is its effect upon the respiration. I believe curare should never be given unless one is prepared to do very adequate, effective artificial respiration, with well-fitting mask and open airway, an oxygen supply, and a breathing bag which may be compressed to fill the lungs and released to allow for expiration.

Please remember that curare is not an anesthetic. It does not cause loss of sensation. It only paralyzes muscles. If the patient has been given a general anesthetic while under the spinal anesthesia, curare is used to very good effect to prolong muscular relaxation when the spinal anesthesia has worn out.

I believe that in operations in the upper regions of the abdomen the patient should be asleep. I would want to be asleep myself under those conditions, in order to avoid nausea and certain discomforts of position and lying upon an unyielding surface.

For our long cases, instead of relying upon the curare for relaxation from the beginning, we use spinal anesthesia produced by nupercaine which lasts at least 3 hours. The patient is put to sleep with gas, either ethylene or cyclopropane, to begin with, and if the procedure continues beyond the duration of the spinal anesthesia produced by nupercaine which lasts at least 3 laxation.

I think the greatest success in good anesthesia lies in knowing how to combine the use of several things during the course of an operation and never having to use any one of them beyond its good and safe application.

MESENTERIC THROMBOSIS

Report of a Case with Recovery

ARTHUR F. GEIS, M.D.

Minneapolis, Minnesota

The occurrence of mesenteric thrombosis is infrequent enough to warrant a report of our case and a brief review of the pertinent literature. Hertzler and Wangensteen report the prognosis as universally grave. However, in the case to be discussed, uneventful recovery followed operation.

Case Report

Mrs. M. M., a thirty-six year-old white woman, entered the hospital August 15, 1943, with a history of acute abdominal pain of two days' duration, generalized over both lower abdominal quadrants. This was accompanied by chills, fever, and vomiting, but no diarrhea. No bowel movement had occurred during this time. An S.S. enema given on admission was returned with no results.

Past history was essentially irrelevant except for an appendectomy thirteen years ago and a cesarean section five months previous to admission.

Physical examination revealed an apprehensive patient with a temperature of 96 F., pulse 130 and thready, and respirations 30 and shallow. Blood pressure on admission was 210/100 but rapidly fell to 80/50. The skin became cold and clammy and the patient went into shock. The abdomen was distended rigid, and tender to palpation; however, no tumor was present. On percussion, dullness was evident, particularly over the flanks.

Urinalysis showed a clear specimen with a 1.021 specific gravity, three plus albumin, three plus sugar, and two plus acetone; microscopically two to three red blood cells and two to five white blood cells per field with many hyaline casts. Examination of the blood gave evidence of hemo-concentration with a hemoglobin of 130 per cent (Sahli), red blood count of 6,500,000 and a white count of 34,600. Differential count showed 93 per cent polymorphonuclear leukocytes and 7 per cent lymphocytes. A tentative diagnosis of intestinal obstruction was made.

Immediate shock treatment was instituted and 250 c.c. of blood plasma were given intravenously, followed by 1,000 c.c. of 5 per cent glucose in normal saline. As soon as the shock was relieved, a laparotomy was done under nitrous oxide and ethylene anesthesia. On entering the peritoneal cavity, a large quantity of bloody fluid was found. A segment of ileum four feet in length (middle part of ileum) was found to be hemorrhagic, edematous, and dilated; the color was a dark purple. Hot abdominal packs applied to the dilated segment failed to produce any change to its color. The portion of the mesentery anchoring the involved part of the ileum was hemorrhagic and revealed thrombosis throughout the secondary arcade of veins, while a constricting band was found at the base of the mesentery. During the operation 500 c.c. of blood and 500 c.c. of normal saline were given, together with 10 minims of neosynephrine to maintain the blood pressure. The involved portion of the intestine was resected and a side-to-side anastomosis done. During the operation, blood pressure fluctuated from 90/70 to 130/90, but the patient's condition improved immediately after the operation when a second blood transfusion was given.

Postoperative treatment consisted in giving 1,000 c.c. of 5 per cent glucose and normal saline every eight hours and gastric (Wangensteen) suction to prevent abdominal distention. The temperature remained at 99 to 100 F. for one week after which it returned to normal. Postoperative course was complicated by the appearance of a focal nephritis the first day after operation when the blood pressure rose to 190/100 and urinalysis gave a specific gravity of 1.022, three plus albumin, 100 red blood cells per field, and many coarse granular casts. Urinary output was about 1,100 c.c. in twenty-four hours. This picture gradually improved and by the eighth day postoperatively the blood pressure returned to normal and the urine was clear. The patient was discharged on the twenty-first day after operation. A checkup of the patient three months later showed that she had gained in weight and felt perfectly well.

Discussion

Occlusion of the mesenteric veins is more commonly seen today than in the past because it is diagnosed earlier. It occurs more frequently in males than in females in a ration of two to one.[9] It prevails during the fifth decade of life and although rare in infants and old individuals, Laufman and Scheinberg[9] report cases in infants of ten days and in patients of 80 years. The site of the thrombosis varies and may occur in the portal vein or any of its tributaries. In a series of twenty-five cases of mesenteric thrombosis, Laufman and Scheinberg[9] found fifteen cases of portal vein occlusions, eight cases of superior mesenteric and only two cases of inferior mesenteric vein occlusions. Wangensteen[13] quoting Trotter (1913) finds that mesenteric thrombosis occurs in 40 per cent and mesenteric embolism in 60 per cent of cases of mesenteric occlusion.

(Continued on Page 672)

From the surgical services of Dr. Thorvald Peterson, Fairview Hospital, Minneapolis. Read by Dr. L. A. Stelter, Minneapolis, by invitation.

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(Continued from Page 670)

The history of mesenteric thrombosis dates back to Tiedemann who reported the first case in 1842. Virchow was the first to describe its pathological picture and reported one case in 1847. The first operation was performed by Elliott in 1895. Jackson, Porter, and Quinby in 1904 reviewed 214 cases reported up to that time while Moore[12] in 1941 reviewed the literature and added eight cases of his own. According to Bell[3] et al. about 770 cases of occlusion of the mesenteric vessels, both arterial and venous, have been collected up to 1940.

The etiology of mesenteric thrombosis has been fairly well established and five main factors are believed to be responsible. They are: (1) peripheral sepsis; (2) portal obstruction; (3) mechanical obstruction; (4) blood dyscrasies; and, (5) trauma. Cokkinis[5] believes the first to be the more frequent cause. Infection may reach the mesenteric veins from any of the organs drained by their branches. Portal obstruction may be caused by pressure on the wall of the vein or cirrhosis of the liver. Blood dyscrasies such as polycythemia rubra, and leukemia are contributing factors. It also appears that abdominal operations play a definite role in causing mesentheric thrombosis. Injury to the mesentery or mesenteric veins during operations and the formation of postoperative adhesions appear to be the most important mechanical means by which thrombosis is initiated. Badin[2] reported a case of appendiceal abscess and extensive inflammation of the mesentery with thrombosis of the mesenteric vein supplying the distal 10 centimeters of the ileum. Microscopically, the intestines show patches of dark blue discoloration which becomes more progressive and assumes the appearance of generalized congestion of the intestinal wall. Red infarction gradually develops with hemorrhage into the lumen of the intestine and bloody fluids extravasates into the peritoneal cavity. The extent of the lesion may vary from an area of several centimeters in length to all of the small and half of the large bowel. However, many cases occur in which portal occlusion alone is present without involvement of any of the large or small intestines. Moore[12] states that vascular disturbance does not always leave permanent structural changes. When the blood supply to the bowel is slowly cut off, there may be no symptoms of occlusion during life and little abnormality of the intestine at autopsy.

The clinical picture of mesenteric thrombosis depends upon the extent of involvement of the mesentery and the intestine. The degree of vascular occlusion and the rapidity of spread probably account for the occurrence of acute and chronic cases of venous thrombosis. In chronic cases, a history of intermittent low abdominal pain, paroxysmal in nature, coming on after meals, and not showing any definite localizations is usually observed. Acute cases usually develop severe colicky abdominal pain, very sudden in onset, which is followed by vomiting and shock. Bell[3] states that chronic cases show a 50 per cent spontaneous recovery. Wangensteen remarks that many cases of mesenteric thrombosis run a fairly mild course, a week often elapsing before an abdominal lesion is suspected. Intestinal obstruction occurs in only a few cases of venous thrombosis. Vomiting is often overshadowed by pain according to Fallis[6] while the reverse is true in obstruction of the small intestine. Vomiting in some cases may relieve the pain. Constipation is often present and the presence of blood on rectal examination confirms the diagnosis. Bloody diarrhea may be present depending upon the extent of hemorrhagic necrosis. The differential diagnosis should include hemorrhagic pancreatitis, acute cholecystitis, perforated peptic ulcer, and acute intestinal obstruction.

Immediate operation is the treatment of choice and the prognosis in most cases is directly proportional to the time elapsing before intervention. The mortality rate is very high, approximately 84 per cent in an operated series of nineteen cases by Whittaker and Pemberton. It can only be reduced by earlier diagnosis and prompt operative intervention. Exteriorization of the involved section of the bowel is inadequate and invariably leads to peritonitis and death. Resection and anastamosis should be done while small localized lesions may be left unoperated.

Summary

A case of venous mesenteric thrombosis is reported and the pertinent literature reviewed. An evaluation of the symptoms of mesenteric thrombosis is offered and an attempt made to clarify the diagnosis. Early surgical intervention is emphasized. The case reported was interesting because of successful operation with recovery and because of the occurrence of a complicating renal picture developing the first day after operation.

References

1. Allen, R. L.: Mesenteric thrombosis. M. Bull., Vet. Adm., 16:73-77, (July) 1939.
2. Badin, P. D.: Appendiceal abscess complicated by mesenteric thrombosis. M. Times (New York), 69:14-19, (Jan.) 1941.
3. Bell, C., Corwin, W., Marcil, O. J., and Semrad, E.: Mesenteric Thrombosis in mentally-ill patients. New England J. Med., 227:901-915, (Dec. 10) 1942.
4. Berman, T. K. and Franke, H. C.: Occlusive vascular disease of the abdomen. J. Indiana M. A., 31:138-142, (March) 1940.
5. Cokkinis, A. J.: Mesenteric vascular occlusion. London J. Anat., 64:200, 1930.
6. Fallis, L. S.: Mesenteric thrombosis, operation and recovery of two cases. Am. J. Surg., 47:128-130, (Jan.) 1940.
7. Giarmarino, H. J. and Jaffe, S. A.: Vascular occlusions: Review of literature and general principles with report of cases. Arch. Surg., 45:647-652, (Oct.) 1942.
8. Hertzler, A.: Mesenteric thrombosis. Christopher's Surgery, 2nd ed., pp. 1025-26.
9. Laufmann, H. and Scheinberg, S.: Arterial and venous occlusion. Am. J. Surgery, 58:84-92, (October) 1942.
10. MacCullum, W. G.: Intestinal Infarction. Textbook of Pathology, 6th ed., pp. 41-42.
11. Mathias, M. L.: Mesentheric thrombosis. J. South Carolina, 36:97-98, (April) 1940.
12. Moore, T.: Vascular occlusion. Brit. J. Surg., 28:347-256, (Jan.) 1941.
13. Wangensteen, O. H.: Mesenteric thrombosis. Christopher's Surgery, 2nd ed., pp. 1025-1026.

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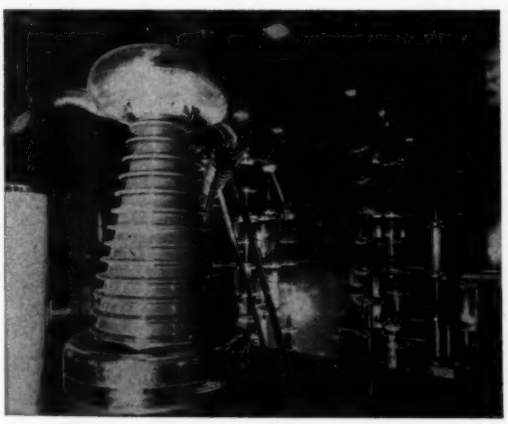

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In Memoriam

DAVID P. MAITLAND

Dr. David P. Maitland, a practitioner at Jackson, Minnesota for over fifty years, died of a heart attack June 25, 1944, at the age of seventy-seven.

Doctor Maitland was born at Sarnia, Ontario, Canada, of Scotch-Irish parentage, August 27, 1866. He attended the high school and collegiate institute at Sarnia before studying medicine at the University of Michigan, where he graduated in 1891. He interned at the Chicago Polyclinic, specializing in internal medicine and pediatrics.

He located in Jackson in 1892. In 1894-1895, he took postgraduate work abroad in eye, ear, nose, and throat, spending most of his time at the University of Berlin.

Doctor Maitland returned to Jackson in 1895, where he continued in general practice being associated with Dr. William C. Portmann and Dr. N. A. Biorn in operating the Jackson Hospital.

For over twenty years he was chairman of the Jackson Board of Health, served as County Coroner for a number of years, and was a past president of the old Jackson County Medical Society. He was a member of the Southwestern Minnesota Medical Society, the Minnesota State, and American Medical Associations. During World War I, he was Examining Physician and a member of the Jackson County Draft Board, and for a number of years also served on the United States Pension Board. During World War II he was examining physician for the local Selective Service Board.

Doctor Maitland was a Mason and for many years held membership in the Knights Templar Commandery

at Fairmont and Osman Temple of the Mystic Shrine, Saint Paul.

He married Bernice M. Thayer of LaCrosse, November 29, 1899.

His son, Dr. Edwin Thayer Maitland, graduated from the University of Minnesota Medical School in 1933, and is now practicing in Jackson, and since 1934 has practiced with his father under the firm name of Drs. Maitland and Maitland.

Doctor Maitland was interested in sports all his life, and while a student at the University of Michigan took an active part in sports. One year he was a member of the Sarnia, Ontario, hose-cart team that set a record for that event at Buffalo, New York. In later years at Jackson, he took an interest in horse racing and was the owner of several fine horses.

* * *

MARTIN BATTS, JR.

Dr. Martin Batts, Jr., died July 8, 1944, at Percy Jones General Hospital, Battle Creek, Michigan, from myelogenous leukemia, with which he was stricken in February, while serving with the Army in New Guinea.

Major Batts was born March 24, 1908 at Grand Rapids, Michigan. He received his M.D. at the University of Michigan, interned at the University of Michigan Hospital, Ann Arbor, and was a resident in surgery at the University of Michigan Hospital in 1934 and 1935. He entered the Mayo Foundation in April, 1935, as a Fellow in Surgery and left in January, 1937, returning to the University of Michigan for three years of specialized study in orthopedic surgery. After receiving his M.S. degree in surgery in 1941, he practiced in Grand Rapids, Michigan, until he entered military service in August, 1942.

* * *

LLOYD THOMAS SUSSEX

Dr. Lloyd T. Sussex, formerly a Fellow in Surgery at the Mayo Foundation, died June 8, 1944, at the Naval Hospital, Farragut, Idaho.

Commander Sussex was born at Hope, North Dakota, February 3, 1899. He received the degree of B.S. in 1923 from the University of North Dakota and M.D. in 1925, from Northwestern University. After interning at Wesley Memorial Hospital, Chicago, from 1925 until 1927, he became a Fellow at the Mayo Foundation. He practiced surgery and obstetrics at Havre, Montana, for a time and then entered service in the Navy, serving in the South Pacific. He was given honorable mention for having operated for seventy-two consecutive hours, during which time he performed operations on 140 wounded men.

Of General Interest

Dr. Bension Scodel, physician at Maynard for the past several years, has accepted a position on the staff of the State Hospital at Fort Wayne, Indiana.

* * *

Dr. E. M. James of Lake Crystal is at Carlisle Barracks, Pennsylvania, where he will receive his preliminary training in the Medical Corps.

* * *

Dr. Henry E. Michelson of Minneapolis was elected president of the Society for Investigative Dermatology at its annual meeting held in Chicago in June.

* * *

Dr. Peter S. Rudie of Duluth was recently promoted from Commander to Captain in the United States Navy. At present he is chief of surgery at the U. S. Naval Hospital, New River, North Carolina.

* * *

Dr. Leonard F. Johnston, formerly of Slayton, has joined the staff of the Winona Clinic. He practiced at Slayton for the past eight years, conducting a small general and lying-in hospital there.

* * *

Dr. Herman E. Hilleboe, former medical unit chief with the State Division of Social Welfare, has been named chief of the Tuberculosis Division of the United States Public Health Service, a newly created post.

* * *

Captain M. G. Ericsson was recently transferred to Fort Snelling, where he expects his assignment to be of a permanent character. Captain Ericsson had practiced medicine in Long Prairie, Minnesota, and Cedar Falls, Iowa, before receiving his military assignment.

* * *

Dr. Charles Frederick Stroebel, former Northfield physician and for the past several years a member of the staff of the Mayo Clinic, Rochester, has been called to active duty in the Medical Corps, with the rank of First Lieutenant. Dr. Stroebel left August 1 for service.

* * *

Dr. I. L. Oliver of Graceville has just returned from Chicago where he took a three weeks' course in surgery at Augustana Hospital. During Dr. Oliver's absence, Dr. David State, senior resident surgeon at University of Minnesota Hospitals, was at the Oliver Clinic.

* * *

Dr. Roger Burkhart, formerly of Rochester, Minnesota, has moved to San Antonio, Texas, where he will

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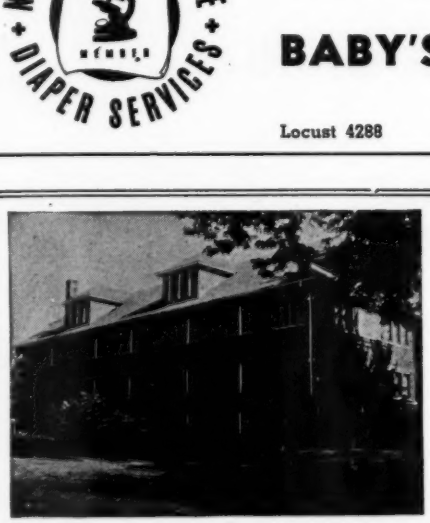

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have charge of a hospital skin clinic. Dr. Burkhart recently achieved the distinction of being the youngest physician ever to pass the examination of the American Board of Dermatologists.

* * *

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